THE PERSUASION-KNOWLEDGE GAP

A philosophical inquiry into the philosophy-rhetoric controversy that aims at a reconciliation of disciplines by means of a unified dialectical-rhetorical framework for debate and persuasion, which is then applied to belief and knowledge in discourse.

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Historically, dialectics is the general method of (early) philosophy. The philosophy-rhetoric controversy of modern dialectics (or argumentation theory) is reducible to a persuasion-knowledge gap. It's addressed in five parts. First, disputes in discourse (dialectics). Critical discussion or debate involves disagreement and contention. An agent's position on an issue includes an opinion (or claim) and ground. A ground is strategically developed in a contest of strengths using psycho-social influence and persuasion. This depends on the conveyance of meaning. Dispute resolution occurs where there is preponderance and a dominant position. The remaining parts selectively elaborate this framework. Second, persuasion (rhetoric). Persuasion involves the use of appeals e.g. rhetorical devices, arguments etc. to influence the propositional attitudes of agents. A hormic-hedonic infrastructure of mind suggests that psycho-social influence occurs through interest-satisfaction and results in an attitude (acceptance-withholding or rejection) toward a proposition. Agents internally operate according to an opinion-persuasion relations with thresholds, which most likely belong to the class of sigmoid functions. Benchmarks (thresholds) are set by a standard of establishment or proof. Satisfying a good standard is a preferred condition for action. Third, reason (dianoetics). Reason is impassioned rationally-principled sem–autonomous intellect. The hormic-hedonic infrastructure of mind suggests it's a source (ideas) and an influence (pro-rational passions). Rationality rests on concepts and principles that regulates conduct (thought, feeling and action). Rational discourse isn't fully understood game-theoretically. A jurisprudential metaphor offers proof-based decision-making as an approach. Fourth, conduct (strategics). The aim of dispute involves both persuasion and dominance in a contest of strength. Arguments are an important class of appeals; they have cogency as their strength attribute. Strategically, conduct involves argumentative strategic criticism. A universal argumentation scheme describes conduct generally and is the basis for strength aggregates. Ideally, dispute resolution occurs when one position satisfies the standard of establishment or proof. Game-theoretically, establishment- or proof-based decision-making involves scores, voting and Arrow's theorem. Fifth, the dialectics of alethic inquiry (epistemics). This is the application of dialectics to claims. Internally, they are beliefs or knowledge. Difficulties (e.g. the Gettier challenge) with the standard justified true belief (JTB) model leads to alternatives like cognitivism, gradualism and thresholdism. What is proposed is an open contested certified true belief model that makes use of a claim-persuasion relation with thresholds. It is underwritten by a progressive rational regimentation of influences that is naturally based on a common ground of pragmatic reliabilism. This requires a preference for persuasive over non-persuasive influences. Thus, knowledge is belief with proof where proof-based decision-making rests on the cogency of arguments and case. Finally, by bridging the persuasion-knowledge gap, the philosophy-rhetoric controversy is settled and a reconciliation of philosophy (representing dialectics) and rhetoric is achieved. Rhetoric is a sub-discipline of dialectics. An implication is a denial of the incommensurability of theories associated with critical discussion and debate in discourse.

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[As to]....the art of getting the best of it in a dispute, ...unquestionably the safest plan is to be in the right to begin with; ....but this in itself is not enough in the existing disposition of mankind, and, on the other hand, with the weakness of the human intellect, it is not altogether necessary. Other expedients are required, which, just because they are unnecessary to the attainment of objective truth, may also be used when a man is objectively in the wrong; and whether or not this is the case, is hardly ever a matter of complete certainty.

Arthur Schopenhauer
The Art of Controversy
p.119 1850

Dedicated in memory
of
Edna Pearl Jane Rinkin
(1899-1968)
&
Oscar Rudolph Rinkin
(1897-1970)

ABSTRACT

Historically, dialectics is the general method of (early) philosophy. The philosophy-rhetoric controversy of modern dialectics (or argumentation theory) is reducible to a persuasion-knowledge gap. It's addressed in five parts. First, disputes in discourse (dialectics). Critical discussion or debate involves disagreement and contention. An agent's position on an issue includes an opinion (or claim) and ground. A ground is strategically developed in a contest of strengths using psycho-social influence and persuasion. This depends on the conveyance of meaning. Dispute resolution occurs where there is preponderance and a dominant position. The remaining parts selectively elaborate this framework. Second, persuasion (rhetoric). Persuasion involves the use of appeals e.g. rhetorical devices, arguments etc. to influence the propositional attitudes of agents. A hormic-hedonic infrastructure of mind suggests that psycho-social influence occurs through interest-satisfaction and results in an attitude (acceptance-withholding or rejection) toward a proposition. An agents internally operate according to an opinion-persuasion relation with thresholds, which most likely belong to the class of sigmoid functions. Benchmarks (thresholds) are set by a standard of establishment or proof. Satisfying a good standard is a preferred condition for action. Third, reason (dianoetics). Reason is impassioned rationally-principled semi–autonomous intellect. The hormic-hedonic infrastructure of mind suggests it's a source (ideas) and an influence (pro-rational passions). Rationality rests on concepts and principles that regulate conduct (thought, feeling and action). Rational discourse isn't fully understood game-theoretically. A jurisprudential metaphor offers proof-based decision-making as an approach. Fourth, conduct (strategics). The aim of dispute involves both persuasion and dominance in a contest of strength. Arguments are an important class of appeals; they have cogency as their strength attribute. Strategically, conduct involves argumentative strategic criticism. A universal argumentation scheme describes conduct generally and is the basis for strength aggregates. Ideally, dispute resolution occurs when one position satisfies the standard of establishment or proof. Game-theoretically, establishment- or proof-based decision-making involves scores, voting and Arrow's theorem. Fifth, the dialectics of alethic inquiry (epistemics). This is the application of dialectics to claims. Internally, they are beliefs or knowledge. Difficulties (e.g. the Gettier challenge) with the standard justified true belief (JTB) model leads to alternatives

like cognitivism, gradualism and thresholdism. What is proposed is an open contested certified true belief model that makes use of a claim-persuasion relation with thresholds. It is underwritten by a progressive rational regimentation of influences that is naturally based on a common ground of pragmatic reliabilism. This requires a preference for persuasive over non-persuasive influences. Thus, knowledge is belief with proof where proof-based decision-making rests on the cogency of arguments and case. Finally, by bridging the persuasion-knowledge gap, the philosophy-rhetoric controversy is settled and a reconciliation of philosophy (representing dialectics) and rhetoric is achieved. Rhetoric is a sub-discipline of dialectics. An implication is a denial of the incommensurability of theories associated with critical discussion and debate in discourse.

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ABBREVIATIONS

abbrev.	Abbreviation.
Abp.	Archbishop.
AD	*Anno Domini*. After death (of Christ).
AI	Artificial Intelligence.
AP	Alethic probability.
Aph.	Aphorism.
App.	Appendix.
approx.	Approximation.
Art.	Article.
AS	Argumentation scheme.
ASCII	American standard code for information interchange.
AT	Argumentation Theory.
Av.	Authorized version.
BC	Before (the birth of) Christ.
Bk.	Book.
Bp.	Bishop.
BOE	Benchmark of establishment.
BOP	Benchmark of proof.
B-type	Belief-type (claim).
CA	Cognitive architecture of the mind/brain.
c., ca.	Circa.
CCTB	Contested certified true belief.
Cf.	Compare or see.
Ch.	Chapter.
Cit.	Cite.
CP.	Collected papers.
Corres.	Correspondence.
CPR-T	Claim-persuasion relation with thresholds.
CSI	Crime scene investigation.
Dict.	Dictionary.
Diss.	Dissertation.
DOB	Degrees of belief.
DOK	Degrees of knowledge.
DT	Decision theory
EBM	Evidence-based medicine.
EDM	Establishment-based decision-making.
ed/s.	Editor/s; edition.
e.g.	*Exempl gratia*, for example.
esp.	Especially.
ESP	Extra-sensory perception.
et al	.....and other authors.
etc.	*Et cetera*, and so on.
EP	Einsteinian physics.
E/PDM	Establishment/proof-based decision-making.
Eq.	Equation or equation-like structure.
Esp.	Especially.
ETI	Extra-terrestrial intelligence.
FA	Forensic approach.
Fig.	Figure.

Fn.	Footnote.
GPR	General practical reasoning.
Greek	Greek.
GT	Game theory; graduation theory.
HH	Hormic-hedonic infrastructure of the mind.
ibid.	*Ibidem*, in the same book, passage etc.
id.	*Idem*, the same.
i.e.	*Idest*, that is
Illustr.	Illustration.
Intro.	Introduction.
IQ	Intelligence quotient.
IRJ	Infinite regress of justification.
IRR	Infinite regress of reply.
IT	Ideal theory.
ITI	The problem of inter-theoretic integration.
JTB	Justified true belief.
KK-thesis	Knowledge-knowledge thesis.
K-type	Knowledge-type (claim).
L., Lat.	Latin.
LC	Logical calculus.
Lect.	Lecture or lecture series.
Less.	Lesson.
Let., Lett.	Letter.
LT	(Ideal) Limit Theory.
MS	Manuscript.
ND	Nuttal Dictionary of English Synonyms & Antonyms.
Notes	Notes.
NP	Newtonian physics.
NSW	New South Wales.
Obs.	Obsolete.
OED	Oxford English Dictionary.
OED (Shorter)	Oxford English Dictionary, shorter version.
op.cit.	Previously cited.
Opp.	Opposite term, notion.
OPR-T	Opinion-persuasion relation with thresholds.
p., pp.	Page, pages.
PDM	Proof-based decision-making.
PDL	Peirce-Dewey ladder of epistemic progress.
Phr.	Phrase.
PKB	Persuasion-knowledge bridge.
PKG	Persuasion-knowledge gap.
pl.	Plural.
pp.	Pages.
PRC	Philosophy-rhetoric controversy.
Pref.	Preface.
Prob.	Probability.
Pt.	Part.
Publ.	Publications.
Q&A	Question and answer.
rev.	Revised.
RT	Roget's Thesaurus.
sg.	Singular.

SDR	Standard of dispute resolution.
SEC	Source-evidence controversy.
sect.	Section.
SOE	Standard of establishment.
SOE/P	Standard of establishment/proof.
SOP	Standard of proof.
Suppl.	Supplement.
Syn.	Synonym.
TOM	Theory of mind.
TP	Tychic probability.
trans.	Translated by.
TT	Threshold theory.
UAS	Universal appellation/argumentation scheme.
UFO	Unidentified flying object.
UK	United Kingdom.
Univ.	University.
UNSW	University of New South Wales.
USA	United States of America.
vs.	Versus.
Wks.	Works.
WWII	World War two.

INTRODUCTION

Sweet Analytics thou hast ravish'd me!
Is to dispute well Logic's chiefest end?
Affords this art no greater miracle?

Christopher Marlow
Doctor Faustus
Act 1 Sc.1 1592

This project is a philosophical inquiry into what is broadly called dialectics and sometimes the theory of argumentation (AT). Here, the focus is on inquiry into the truth of things. As argument(ation) is traditionally central to the activities of philosophy, this inquiry is therefore a contribution to this discipline. However, the theory transcends the boundaries between disciplines as it has general -- if not universal -- applicability. Unfortunately, it suffers from an apparent incommensurability of theories. My inquiry makes a contribution to philosophical attempts to redress this current state of affairs through a general unified study of reason, argumentation and disputation in discourse; and an application to inquiry itself. In my view, the greatest obstacle to inter-theoretic integration is the philosophy-rhetoric controversy which is fundamentally due to a persuasion-knowledge gap in our understanding of critical discussion or debate in discourse.

Essentially, research like this is about problem-solving that takes place in the discourse of a community of inquirers. I agree with Meyer [1995] who, in his *Problematology*, proposes and argues that dispute – more precisely, critical discussion or debate -- is about solving problems in discourse. Hence, I highlight the problematics of my own thesis by identifying the following aspects: problem, problem-solving and solution. Interestingly, solving one problem may help solve other problems. Such a facilitation occurs within this inquiry. Here, I outline the investigation and the report of my research project by addressing the purpose (aim and rationale), context, plan (method and report) and finally the results. The purpose and context deal with the problem, the plan deal with problem-solving and the results deal with the solution.

1. Purpose

In considering the purpose of my inquiry it is necessary to describe its aim and the rationale for pursing it.

1.1 Aim

My aim in undertaking this inquiry is to come up with good solutions to two inter-related philosophical problems. In the context of philosophical discourse, the issues are:

(1) The philosophy-rhetoric controversy (PRC); and
(2) The persuasion-knowledge gap (PKG)

I contend that a good resolution to issue (1) is not fundamentally achievable without a good solution to issue (2). However, both solutions are concerned with the cognitive integrity of our understanding of discourses in which debates arise. To show that this is so, it is necessary for me to elaborate those issues and critically discuss how they are related to each other.

The PRC is due to apparently opposite orientations. According to a means-end conception, they involve:

(1) Dialectics (of Philosophy): The pursuit of truth (knowledge) by the use of Reason in overcoming disagreement in a critical discussion or debate.
(2) Rhetoric: The pursuit of interests by the use of persuasion in a social exchange i.e. conversation, public speaking etc.

Typically, one is concerned with "seeking the truth" amongst opposing opinions in discourse; and the other with "winning the contest" of opposing interests in discourse. Fundamentally speaking, are they really so different?

Historically, the conflict between philosophy and rhetoric has given rise to a pejorative sense of “rhetoric”. Lanham [p.88 1968] describes it as follows:

> Plato argued – first in the *Gorgias*, then less harshly in the *Phaedrus* – that rhetoric was a sham art, really no art at all, because -- concerned only with deception -- it could have no true subject matter. Aristotle's counter-argument, that rhetoric had to do with the available means of persuasion, and was thus as much a practical art as any other, would seem to have settled the question..... To rhetoric Plato opposed dialectic, the means of searching out truth. This oversimplified distinction has lingered, so that "mere rhetoric" means artful sometimes fanciful lying. .....

Thus, there is a stark contrast between the dialectics of (early) philosophy and the rhetoric of other endeavors such as politics, government, law, military leadership and even religion. Essentially, this contrast is due to Plato who distinguished the pursuit of the good and the true (knowledge) by discussion and debate; as against the pursuit of (other) interests by persuasion. It is a contrast that was challenged by Aristotle, Cicero and others. Aristotle [384-322 BC] proffered a more accommodating account in *Rhetoric*. Later, this split in our understanding is figuratively described by Cicero [3.6I 106-43 BC] in *De Oratore*. He states:

> Hence, came about that split -- absurd, harmful and deplorable as it is -- between the tongue and the mind, whereby one group of people teaches us to be wise, another to be eloquent.

In this excerpt, Cicero contrasts philosophy (“the mind” and “being wise”) with rhetoric (“the tongue” and “being eloquent”). This conflict of mindviews persists throughout the history of ideas. Halliwell [p.223 1994] states:

> For much of the history of European culture, philosophy and rhetoric have been regarded as indispensable categories in the analysis of intellectual activity and in the organization of academic or scholastic institutions. Yet during many periods of this history there has been uncertainty and debate about the scope of philosophy and rhetoric as individual pursuits or disciplines, and therefore about the relationship that does or should obtain between them.

Quite so. But are they necessarily in opposition? Can they be reconciled by a wider and deeper understanding? I think they can. Today, such a venture is

pursued under the banner of: the reconciliation of philosophy and rhetoric.

To properly achieve this reconciliation, I think it is necessary to do this at both the theory- and concept-levels of consideration; however, there has to be coherence across the levels. A theory-level consideration is concerned with identifying and specifying theories and the gross inter-theoretic relationships between them. Both theories and inter-theoretic relationships are structurally reducible to conceptual schemata and inter-schematic relationships. A conceptual schema consists of concepts and relationships between them. A logical sub-structure can be defined over propositions (specified by e.g. two concepts and a relationship between them) that can be specified at this level of consideration. Overall, this view is outlined by Lanham above and shown in figure 1. The philosophy-rhetoric pair is conceptually reducible to a dialectics-rhetoric pair. Essentially, the controversy is about apparently opposite approaches: the dialectics of philosophy and the rhetoric of other endeavors. In turn, this pair is reducible to an epistemology-rhetoric pair. This is due to the early philosophical account of dialectics being based on an inquiry into the truth of things. Those opinions concerned with truth are called claims, beliefs or knowledge. Today, they are studied by epistemology. So far I have only elaborated our understanding at the level of theories. However, such a reconciliation of philosophy and rhetoric can only come first at the level of concepts and relationships. There is no great leap to recognize that core concepts of the respective theories are knowledge on the one hand and persuasion on the other hand set within the context of some understanding of discourse. Hence, insofar as we don't adequately or fully understand their nature and inter-relationships, there is a persuasion-knowledge gap. In my view, the gap still exists today. The relationship between persuasion, reason and knowledge is still problematic. On the one hand, opinions can only be influenced by persuasion and other influences. Each of us persuades the self as much as others. And, on the other hand, opinions can become beliefs and even knowledge. So, how can some opinions – specifically claims – ultimately become belief and then perhaps knowledge through persuasion in discourse?

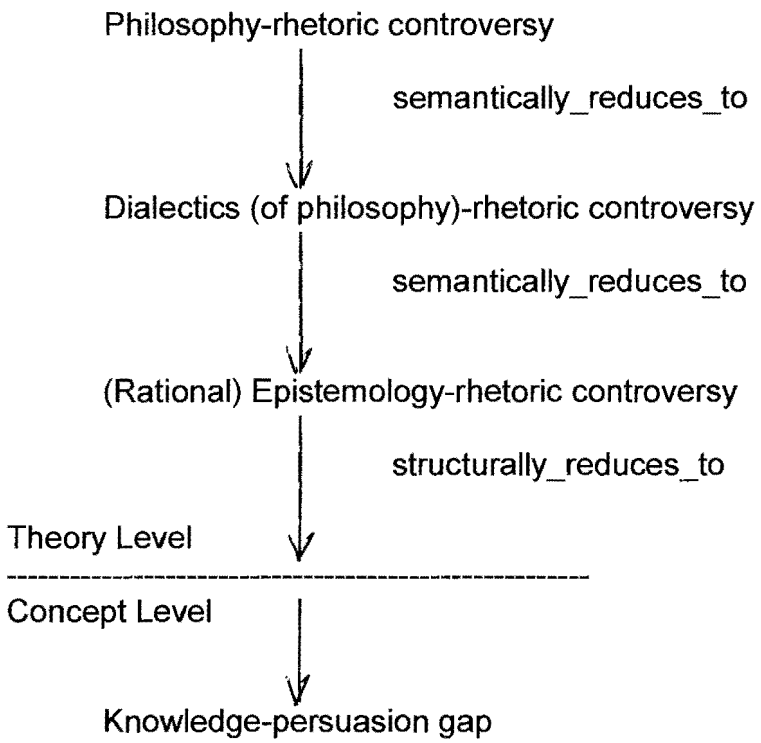

Figure 1: Conceptual Reduction of the Philosophy-Rhetoric Controversy. The philosophy-rhetoric controversy is specified at the theory-level of disciplines and is reducible to the concept-level of conceptual schemes; that is, a scheme of concepts and relationships.

1.2 Rationale

Apart from the intellectual challenge, there are a number of reasons that motivate me to carry out this philosophical inquiry. In doing so, I distinguish my primary and secondary reasons. The primary reason has to do with solving the problem of inter-theoretic integration (ITI), which has a greater compass and which I discuss in greater detail below. The others are secondary reasons.

I shall start with the secondary concerns. They relate to:

(1) The psychosocial operating principles of disciplines generally and in everyday social life;
(2) The controversies of metaphilosophy;
(3) The importance of (1) and (2) for philosophy education;
(4) The contribution of philosophy to the consortium of disciplines; and,
(5) The evidence-based movement (EBM) in today's professions e.g. evidence-based medicine.

It is my view that by adequately dealing with the primary concern of ITI – by way of dealing with the PKG and consequently the PRC – those secondary concerns are then adequately addressed as well.

Now I turn to my primary concern. The current status of AT is described by van Eemeren *et al* [p.4 1996] as follows:

> The study of argumentation has so far not resulted in a universally accepted theory. The state of the art can therefore not be explained by describing one leading theory. It is characterized by the coexistence of a variety of approaches, differing considerably in conceptual breath, scope of horizon, and degree of theoretical refinement.

Quite so. I call this state of affairs the problem of inter-theoretic integration (ITI). This problem is like the network problem of reasoning identified by Johnson [pp.237-39 1996]. Unlike Johnson, I take argumentation to have the greater compass and therefore it includes reason and reasoning. Whatever name this

problem goes by, it is related to another problem with even greater compass called the incommensurability problem identified by van Eemeren [1996]. This greater problem can arise in and amongst disciplines and is "caused by the radical differences between theories, paradigms and worldviews" that makes them *prima facie* incompatible. Clearly, Johnson's and my stance is that inter-theoretic integrity is possible, if only because the domain of discourse experientially presents itself to participants as a coherent whole. So, whatever understanding we have must mirror this.

After much reflection, I settled on what I call cognitive perspectivism as a way of solving this problem. The conceptual structure of our understanding is diverse and could be sub-divided in a number of arbitrary ways. I propose that there are truly fundamental perspectives on discourses, many of which are traditionally recognized in the history of ideas e.g. dialectics, logic, rhetoric etc. The perspectives are based on modes (internal aspect) and roles (external aspect) of agents who participate in the discourse of a community. In offering this account, I'm inspired by the old saying of "looking at the world through rose-colored glasses". Applying this spectacle metaphor, I posit different points-of-view or perspectives on the same domain. Viewing a discourse is analogous to viewing the same scene using different colored glasses. Thus, I came to a high-level understanding of how I think the sub-disciplines of AT are related to each other, including the relationship of this theory as a whole to others in the totality of understanding. This is shown by figure 2. Fundamentally, the context of AT is

(1) Semiotics, the theory of sign (systems).

Language and other sign systems are central to cognition and communication – especially conversation – in discourse. A proper sub-type of semiotic is one concerned with disputes in discourse. It is:

(2) Dialectics, the theory of dispute, especially critical discussion or debate (in discourse).

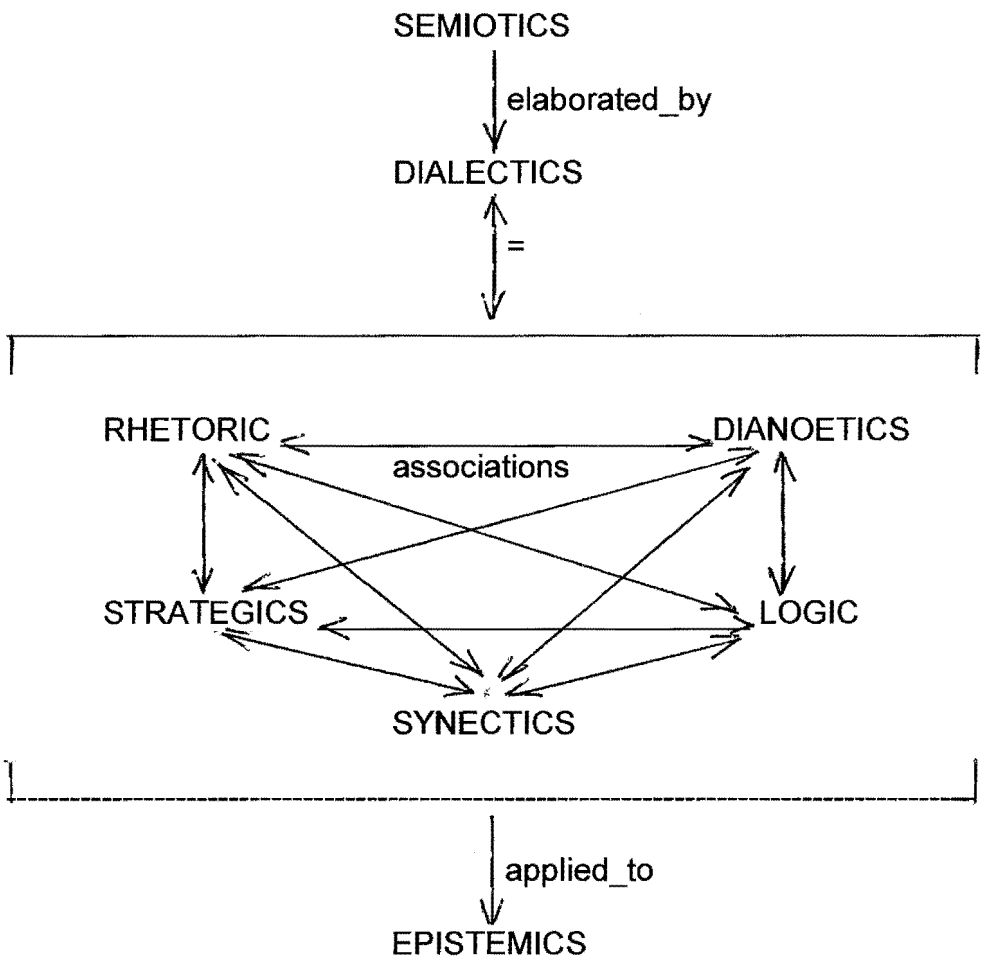

Figure 2: Inter-Theoretic Framework for Dialectics. Dialectics (as a discipline) is a sub-theory of the theory of discourse called semiotics. Dialectics (as the core conceptual scheme) for the discipline is partially elaborated by rhetoric, dianoetics, strategics, logic and synectics. These are the major ones but there may be minor ones e.g. eristics, problematics as well. Epistemics is a proper sub-theory of discourse concerned with alethic inquiry by debate in discourse. A traditional approach to rational alethic inquiry is forensics.

Generally, disputes deal with deciding between differences of opinion through a contest of strength in combat or conversation. Here, I'm using the wide sense of dialectics which means organized opposition in discourse. This accords with the Heraclitean notion of opposing forces in Nature; and, more specifically, the general appreciation of critical discussion or debate (say) as a way of rational inquiry in early Philosophy. Other concerns associated with dialectics include:

(3) Rhetoric, the theory of persuasion;
(4) Dianoetics, the theory of reason;
(5) Strategics, the theory of strategy (and tactics);
(6) Logic, the theory of inference; and,
(7) Synectics, the theory of dispute development.

Within some of the aforesaid theories, there may be sub-theories. For example, there is eristic, the theory of issues; or, by the other name of problematics, the theory of problems. All these theories are conceptual elaborations of features that are prominent in dialectics proper. Thus, using the spectacle metaphor, we may view debates from a rhetorical, logical, dianoetical, strategic or synectic perspective etc. Though they are different perspectives on the one system type, they are not conceptually disjoint: there are subtle relationships, even dependencies, between them, which synergistically bind the parts into a whole. It is my position that a reasonable, plausible and viable understanding that addresses the PKG and subsequently the PRC will highlight the inter-theoretic integrity of these perspectives.

Given all this, where do claims (including beliefs and knowledge) come in? It is important to recognize them as opinion types which I call alethic opinions. Primarily, they reflect the philosophical origin of the PRC. Philosophy is the "love" of wisdom; that is, the getting, having, using and developing of wisdom. One crucial aspect of wisdom is knowledge (via belief). Philosophy conducted itself through the Grecian method of dialectics; that is, the inquiry into the truth of things by critical discussion or debate. However, though dialectics historically developed variant meanings, it more-or-less remained true to its origins. I conceive it to be

concerned with 'critical discussion or debate generally, though I sometimes prefer "dispute" to emphasize the driving-force of conflict that underlies it. The upshot of all this is: I take a dialectical stance on the nature of belief and knowledge and therefore treat them under the banner of

(8) Epistemics, the theory of knowledge in (the practice of) discourse.

Technically, it is not another theory of dialectics but a proper theory sub-type of dialectics. It is what Peirce called a theory of inquiry, though he named it methodeutic. Here, another tradition comes to light. There is a rational dialectics of inquiry called forensics which was originally identified by Aristotle. It posits a jurisprudential model as a way of generally understanding and conducting inquiry-based debate in discourse.

So far, this all seems well-and-good. However, it is not enough. Cognitive perpectivism only gives us an understanding of discourse and debate at the level of theories. If we are to fully understand what it is for this to be so, it is necessary to explore such discourses at the level of concepts and inter-conceptual relationships. That is, it is necessary to know the nature of concepts like opposition, reason, persuasion, inference, conduct etc.; and how they relate to, even depend on one another in discourse.

2. Background Context

This philosophical inquiry, like any inquiry, is directed at some domain of interest and formulated in a context of working assumptions and theoretical approaches. Here, I discuss each of these aspects in turn.

2.1 Domain

Broadly speaking, the domain of this philosophical inquiry involves debate and alethic inquiry in the discourse of a mind or community of minds (of agents) thereof undertaken in relatively shared contexts and circumstances. The discourse

itself makes reference to some domain of interest to those agents. I could have referred to “some domain of the Universe” but that would be too restrictive. For instance, it leaves out fictions, counterfactuals and even considerations of things “beyond” our Universe as we conceive it in this day-and-age.

2.2 Context

An inquiry is an activity carried out in a context and the circumstance of the agent or community. They occur in the context of some on-going discourse in the mind and community of practitioners and the body of opinion associated with it. So it is with this project. The working presumptions for this inquiry include commitments with regard to:

(1) Ontology;
(2) Metaphilosophy;
(3) Theory of argumentation (Dialectics); and
(4) Theory of inquiry.

Their inter-relationships are shown in figure 3. Though this is not the time or place to critically support and defend them, I outline the four areas of presumption so that my philosophical orientations are clearly understood. They can be found in appendix 3. The four areas of presumption I have outlined are not disparate but have conceptual dependencies between them as shown in figure 3. The ontological commitments have a philosophical character and overarch my understanding as a whole -- such is the ultimate nature of the abstract generality of ontologies. Thus, they tend to influence my metaphilosophical outlook on philosophical things, including my view of reason, argumentation and disputation by which philosophical activity is carried out. Furthermore, my approach to them is, or ought to be if it is not, the basis for establishing both my ontological commitments and metaphilosophical outlook.

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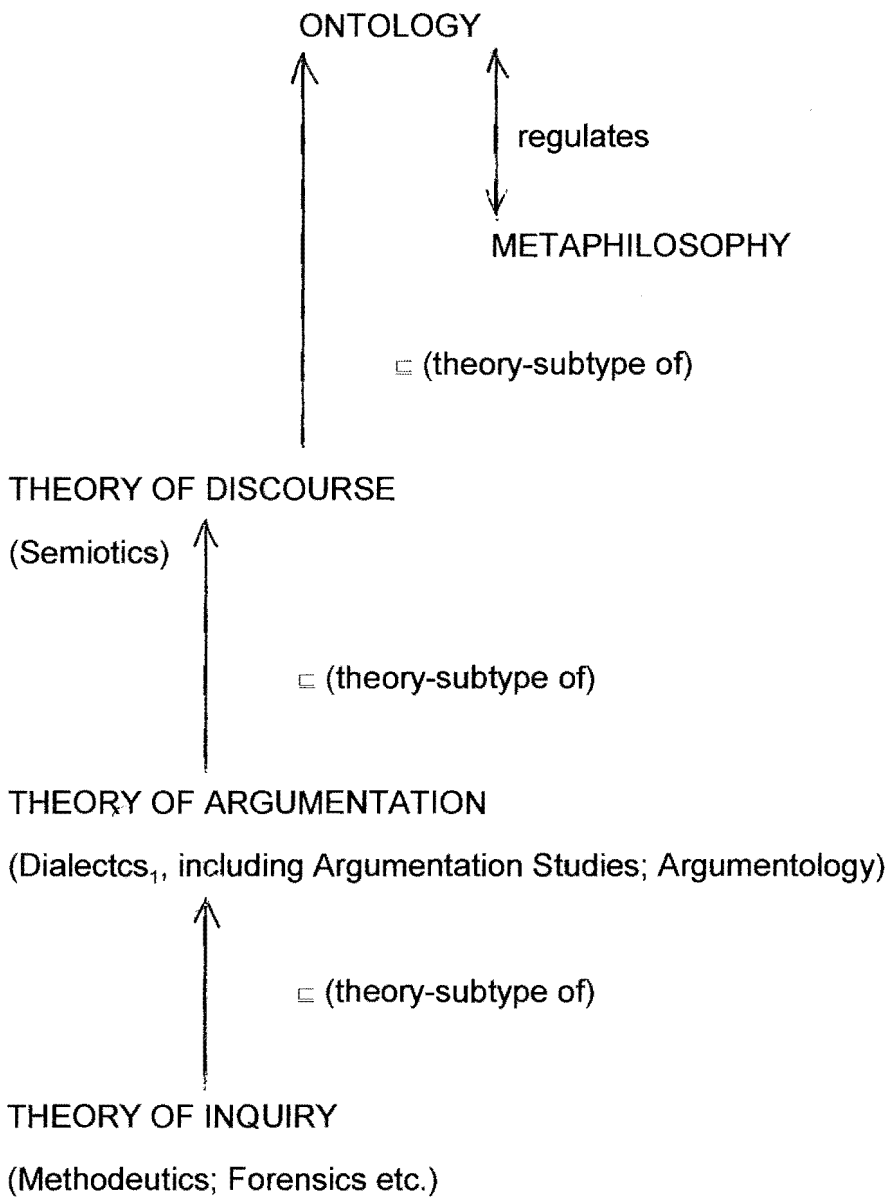

Figure 3: Inter-Disciplinary Relationships. The context-based dependencies of ontological commitment (ontology), meta-philosophical outlook (meta-philosophy), theory of argumentation and theory of inquiry.

But given these are early days much of what I entertain about reason, argumentation and disputation has more of a philosophical character than anything else, though I bring to it some appreciation of what science and mathematics have to offer at this time.

3. Plan

As I see it, there are two major aspects that a research plan has to address. They are the method and report aspects of research activity. These two aspects of the plan are now described below.

3.1 Method

As the statement of my metaphilosophy suggests, philosophy is like any rational discipline, except for its generic prudential perspective on the totality of understanding. Thus, it goes about its inquiries in a similar way albeit with constraint as to division of labor and what is philosophically important. The philosophical method I employ involves a generic approach called cognitive systematization. The specific approach centers around Reason as it relates to issues, propositions e.g. facts, definitions, conjecture as well as reasoning and evidence. I shall discuss each in turn.

Before proceeding, there is a cautionary note regarding what I call the arc of reflexion. When it comes to the method of inquiry, I'm troubled by the inherent reflexive character in my own research. Peirce tacitly recognizes this when referring to such endeavors as an inquiry into inquiry itself. The very things I'm inquiring into are the very things important to carrying out this inquiry. Believing the developments of my understanding in this matter, I have to somehow declare now what I expect to determine in due course. Fortunately, "the devil is in the detail" and as this inquiry is about the details of things more-or-less generally recognized in discourse, I can skate over the details at this stage.

Generic Approach. The general method of this philosophical inquiry can be characterised by what Rescher calls “cognitive systematisation”. In tracing the history of the notion of system, Rescher [p.21 1979] identifies “the heritage of the Leibniz-Wolff tradition which sees systematisation as the modern vehicle for the ancient ideal of *scientia* – a body of knowledge developed as a comprehensive whole according to rational principles”. He notes that this is a view echoed by Kant. Another term used by Kant [p.653 1781] in *Critique of Pure Reason* and endorsed by Peirce is “architectonics”. Kant states: “by architectonics, I understand the art of constructing systems”. Essentially, inquiry ought to be conducted in a systematic way. It might be suggested that we just don’t know enough to proceed this way. This can be claimed at any stage by a reasonable person; therefore, there is no time to start. Better then to start constructing a system of understanding early and proceed systematically, correcting along the way. As noted by Rescher, Kant [A832-B860 1781] also states that “systematic unity is what first raises ordinary knowledge to the rank of science”. Here, of course, “science” is used in the sense of the body of knowledge of a discipline e.g. science, mathematics, philosophy etc. that operates according to established rational principles. As for dialectics and AT, cognitive systematisation is carried out at both the concept- and theory-level of consideration.

Specific Approach. Here I discuss the manner by which I go about systematising concepts and relationships associated with debates in discourse, including inquiry-based ones. The focus is on:

(1) Issues
(2) Propositions and theories; and
(3) Reasoning

Systematicity essentially involves the logical development of thoughts through reasoning. This includes recognising relevant alternatives and debating the best possible option. Broadly speaking, this inquiry involves the cognitive systematizing of successively introduced facts, definitions and conjectures by cogent reasoning;

resulting in a body of understanding which is at least relevant, coherent (including consistent) and robust. I shall now discuss each of the above aspects in turn.

First, consider issues. As I shall propose and argue later, issues highlight the presence of gaps in our understanding. Often they give rise to opposing positions on the issue. It is necessary to deal with issues in a way which does not ignore them but does not cause the project to bog down in the mire of controversy. Hence, I follow these guidelines:

(1) If the problem is critical to establishing that a theory is separate, coherent, robust in nature then an attempt is made to solve the issue.

(2) If the problem is not critical to establishing that a theory is separate, coherent, robust in nature then I recognize it but use fair and reasonable means to side-step the issue.

In this way, the problem is recognized upfront -- not ignored or "swept under the carpet" -- and dealt with in a way which does not detract from the proper task at hand.

Second, consider propositions and theories. Where issues don't obviously or immediately arise, it is adequate to assert (introduce) propositions. Issues don't arise because:

(1) The issue is settled and there is one well-accepted proposition or theory; and

(2) There is only one well-accepted proposition and theory at this time as there are no others or the others are generally not considered to be viable.

The assertions I introduce as premises in my lines of reasoning consist of three

types. They are:

(1) Facts;

(2) Definitions; and

(3) Speculations

Regardless of their nature, there is a concern over the ground for asserting (or introducing) them. If they are deemed familiar to many, if not all, people then they are put down to commonsense. As Blackburn [p.70 1994] points out, “after Descartes use of it for the “common sensibles”, common-sense came to refer to

> .....sturdy good judgement, uncontaminated by too much theory and unmoved by scepticism, that is supposed to belong to persons before they become too philosophical.

The use of this notion is strongly supported by Moore [1925] in *Defense of Common Sense*. He argued that “no philosophical argument purporting to establish scepticism could be more certain than his common-sense convictions”. If there is controversy surrounding any of them then I address it or, if it is a distraction, I put it aside with some indication of how I might otherwise address it. Furthermore, there are specific concerns relating to each assertion type, which I address now.

I take facts to be about a real thing, domain or world . More precisely, they attempt to describe the way things really are. Some descriptions I take to have an explanatory character. At the very least. I want to establish some reasonably reliable claims about reason, persuasion, argumentation and disputation in discourse. Essentially, I want a set of working facts. Even scientific research has to have some working conceptual frameworks to begin with. The grounds for facts rests on common sense, anecdotal evidence or scientific studies.

Conjectures are hypotheses or theories which are put forward as possible facts

relating to a thing, domain or world. Some conjectural sources are:

(1) Guiding metaphors;

(2) Synthesis; and

(3) Intellectual heritage arising from (1) or (2).

Interestingly, what is noticeable about our language of debates in discourse is the appropriation of terms and expressions relating to the physical world to the socio-psychological world of minds and persons. Underlying any commonality of conception are metaphors and analogies. Some of these metaphorical insights appear to be enshrined in the language corpus of the law. It is also apparent in public debate, though this may be due to some, if not many, politicians having a legal background. Indeed, as is evident in the work of Aristotle, Toulmin [1958], Perelman [1958] and others there is a tradition of using a jurisprudential model to understand critical discussion or debate generally. An attempt is made to develop a ground for these conjectures. Some are drawn from the work of past philosophers and scientists while others are original contributions.

Definitions give the meaning of terms and expressions. Essentially, we are answering the question: “What is (the nature of) x?” In my view, definitions are theory-laden just like observations; and a good definition reveals something of the nature of a thing rather than merely offering an equivalent expression. In pursuing the right definition, there are some cautionary notes to consider. Given this, we have at least one criterion for definitions. Only if a definition has a factual character is it a good one; that is, it tries to tell us something about the nature of things rather than merely give us equivalent expressions or synonyms.

In his essay *A Plea for Excuses*, Austin [1956-7] states:

> Our common stock of words embodies all the distinctions worth drawing, and the connexions worth making, in the lifetimes of many generations: these surely are likely to be more numerous, more sound, since they have

> stood up to the long test of survival of the fittest, and more subtle, at least in all ordinary and reasonable practical matters, than any that you or I are likely to think up.

Austin is right to recognise the intellectual heritage associated with language; however, its not always easy to identify the right definition, especially as meaning and language develop. Fortunately, there are a number of sources. They are:

(1) Ordinary language use

(2) Reputable sources

(3) Linguistic heritage

(4) Conceptual analysis

Associated with them are some cautionary notes to keep in mind.

Where possible, I endeavour to start with the language use of everyday life. This is evident to all of us. I have listened to the language of our times. The public arena which is presented to us by the media eg. radio, TV, the internet, newspapers, videos etc. shows a regularity of language use with regard to discourses and debates of the day. The sampling of articles in newspapers and magazines relating to current affairs highlights this. However, in the dialogue *Theaetetus* by Plato [c.427-347 BC] the character of Socrates advises us to be cautious with regard to

> .....the common use of words and phrases…..[as] the vulgar twist [them] into any sense they please and so perplex one another in all sorts of ways.

Perhaps this is an exaggeration. If anything it cautions us about language use. Hence, it is necessary to start with an adequate tentative footing as much as this is possible.

To identify terms and expressions associated with reason, persuasion,

argumentation and disputation in discourse I regularly have made use of Roget's Thesaurus [1852; rev. ed. 1962]. A few people have criticised the occasional idiosyncratic character of some aspects of Roget's classification scheme and word markers. But all we require are the rough essentials to get an inquiry up-and-running. And, for the meanings of terms and expressions, I have elected to use the Oxford English Dictionary (OED) [1933; 1989]. In *The Meaning of Everything*, Winchester [2003] tells us the story of this extensive dictionary. It is highly regarded for its accuracy, completeness and disinterestedness as an "official" record of language use that is backed up by documentary evidence. It is my view that it attempts to objectively capture the wisdom of past and present language use. I attempt to summarize the meanings through quotation, describe further details and then conduct a conceptual analysis where necessary to settle on a meaning that more-or-less coheres with current language use or necessitates that there are good reasons for re-consideration. As required, I follow this up with philosophical and/or scientific attempts to refine the meaning as can be found in technical dictionaries.

I am aware of two possible fallacies which may arise. Fallacies are mistakes in thought or reasoning. Those fallacies are: the etymological fallacy and lexical fallacy. I shall comment on each with regard to this work. Fallacy (1) is the mistake of confusing a past meaning for the current one. Presumably, past meanings are known through lore or dictionary. Generally, the meaning of terms and expressions change when the ideas of language users changes. And fallacy (2), the so-called dictionary fallacy, is the mistake of confusing a dictionary meaning for the one occurring in discourse within a community. In conversation, Staines [Feb. 2004] recalled a comment made by Hamblin in the 1980's concerning the use of dictionaries: "…..the dictionary is not a philosophical document – [and is] to be used sparingly". And, I suppose, this applies to a thesaurus and other references concerning the origin, synonyms, antonyms of words and expressions. However, the best available ones are important sources of information on the origin and history of ideas as well as language use, especially where controversial topics are concerned. Such sources can be a disinterested objective empirical record of language use generally. Furthermore, where wisdom has been lost or forgotten –

which I think has happened where discourse and debate are concerned – that record is important.

Still, there is the criticism of precization to wit that I might be attempting to be too precise where, given the alleged nascent nature of the discipline, it is unwarranted. This is a contentious judgement to make as people are likely to differ on this. In response to a criticism of precization, I invoke an alternative view suggested by an epigraph to *The Methods of Ethics* in Plato's [504E c.427-347BC] *Republic*. Therein he retorts:

> Or would it not be absurd to strain every nerve to attain to the utmost precision and clarity of knowledge about other things of trifling moment and not to demand the greatest precision for the greatest matters.

If not the greatest of matters, my philosophical inquiry deals with important matters. It has implications for all disciplines and everyday life. This necessitates precision with regard to the meaning and use of terms and expressions. Generally, I think we should try to be as precise as possible. At the very least, we should avoid ambiguity, vagueness and frivolous contention.

Third and last, reasons and reasoning associated with the above. My preliminary understanding of reasoning coheres with Blackburn [p.320 1994] who states that reasoning is

> Any process of drawing a conclusion from a set of premises.....Evidently such processes may be good or bad; if they are good, the premises support or even entail the conclusion drawn; if they are bad, the premises offer no support to the conclusion.

Furthermore, it has to be adequate and complete. In what can only be called an arc of reflexion in this inquiry, I critically examine the notions of reasoning and arguing that apply here. Blackburn's account suggests a range of judgements concerning deductive and non-deductive reasoning. Generally, as I point out later, judgements of reasoning are best appreciated in terms of cogency.

3.2 Report

I now outline the organization of my report. Outside of the introduction and conclusion, each chapter begins with an overview, which includes a topic description. At the start, the introduction presents the issues of the PRC, the PKG as well as the problems of incommensurability and inter-theoretic integration (ITI) which orientate the rest of the report. The chapters that follow mirror the inter-theoretic framework previously shown in figure 2. The chapters are:

1. Discourse, Conflict and Dispute
2. Persuasion
3. Reason and Passion
4. Positions, Contest and Establishment
5. Knowledge

Two planned chapters are not included due to the thesis constraints on this research report. They are “Inference” (logic) following chapter 4; and “Ideologies, Regimes and Progress” (synectics) prior to chapter 5. A general study of debates in discourse would include them and exclude chapter 5 on “Knowledge” or treat this as an application of dialectics to alethic inquiry, which involves the production of claims, beliefs and knowledge. Each of the chapters of the thesis is selectively developed to the extent that they contribute to addressing the primary issues of my inquiry. The chapters are organized into two parts. The first part of the report is covered by chapters 1 to 4. The background context is the semiotics of mind and conversation. Chapter 1 is concerned with the core concepts and principles of dialectics. Here, there is an emphasis on discourses which give rise to disputes; in particular, critical discussion or debate. They involve a conversational form which has at least a persuasive and contentious character. Some ideologies of debate are touched upon. Chapter 2 is concerned with persuasion in discourse (rhetoric). Persuasion is a form of psycho-social influence over opinion that operates through language use. Appeals and arguments are the instruments of persuasion, which are directed at the hormic-hedonic (HH) infrastructure of mind.

It operates according to an opinion-persuasion relation with thresholds. The threshold marks being convinced and forming a conviction that may eventually inform actions. Chapter 3 is concerned with Reason in discourse (dianoetics). Reason tends to occur concurrently, if at times intermittently, with discourses. Indeed, it is a source (ideas) and an influence (over opinions of the self and others). Its influential aspect is due to the HH infrastructure of mind. Reason is impassioned rationally-principled semi-autonomous intellect. Where debates are concerned, game-theoretic insights may be gained using a jurisprudential model, which suggests establishment- or proof-based decision-making. And, chapter 4 is concerned with strategic conduct of agents in discourse (strategics). The aim of debate is dispute resolution by the dominance of one position over others through a contest of persuasive strength. Arguments are examined here as the class of rational appeals. The persuasiveness of arguments and case (rational ground) is based on cogency (logic). Dispute resolution occurs when there is preponderance as determined by establishment- or proof-based decision-making. Where social decision-making is undertaken in this respect, then Arrow's theorem becomes relevant. The second part involves the application of the dialectics of opinion in discourse (chapters 1-4) to claims in inquiry-based discourse. Chapter 5 is concerned with the production of claims (beliefs and knowledge) through alethic inquiry in critical discussion and debate (epistemics). This involves the application of dialectics – as developed in the second part of the thesis – to alethic inquiries. Essentially, an alethic inquiry is conducted through debate in the discourse of mind and community. Observations, experiments etc are merely an evidence-gathering function of discourse. It is through debate that a claim (alethic opinion) is contested in relation to relevant alternatives. Internally, claims are expressed as beliefs and perhaps knowledge. Given this, it is necessary to recognize current issues and developments in epistemology proper. Finally, the conclusion offers a summation of the results and the implications of my inquiry. The summation shows how persuasion, reason and knowledge are conceptually related to each other in the discourse of critical discussion or debate; and thereby bridge the PKG. Consequently, this allows the PRC to be properly addressed by showing how dialectics (of early philosophy) is related to rhetoric. Due to the development of an inter-theoretic framework of sufficient generality to deal with the PRC and the

PKG, an implication is the denial of the incommensurability of theories relating to debates in discourse.

4. Results

The result has to do with the outcomes of the inquiry in relation to its aim. At the start, I was fairly confident that I could achieve an outcome which more-or-less matched the aim. That outcome involves an acceptable solution to the problem of the PKG and consequently the PRC which meets the requirements of a good theory to an adequate extent; and contributes to a solution to the problem of ITI. Due to constraints on the thesis, some secondary issues cannot be addressed at this time. The results of my inquiry are highlighted in the conclusion wherein I give a summation. An outline is given at both the concept- and theory- levels of consideration. It is possible to offer not only a reasonable, plausible and viable reconciliation of philosophy and rhetoric but an implied universal inter-theoretic framework for understanding critical discussion and debate in disciplines and everyday life.

In sum, I have described the main features of my philosophical inquiry. There is, however, a cautionary note to make. The purpose of the inquiry involves finding an acceptable solution to a recognized, legitimate problem in the theory of argumentation: that problem is the PKG which is a prelude to settling the PRC and thereby contributing to solving the problem of ITI. Because of the scope of the inquiry, it risks having to confront numerous issues which cannot be fully addressed within the official restrictions imposed on the research project. This leads to a tug-of-war between the scope and depth of coverage. Clearly then, an appropriate balance has to be struck between them. As stated under method, I focus on those issues which are most important; that is, those which are relevant and significant to achieving my aim. Other issues are mentioned and elaborated upon to some extent, thereafter they are put aside for another time. By maintaining this focus, I think I have managed to strike a fair and reasonable balance.

CHAPTER 1: DISCOURSE, CONFLICT AND DISPUTE

"When *I* use a word," Humpty Dumpty said, in a rather scornful tone, "it means just what I choose it to mean -- neither more nor less."

"The question is," said Alice, "whether you *can* make words mean so many different things."

"The question is," said Humpty Dumpty, "which is to be master -- that's all."

Lewis Carroll
Through the Looking-Glass
Ch.6 1872

Initially, the focus of my philosophical inquiry is the genre of disputes, specifically critical discussion or debate in discourse of mind or community. My aim is to develop the rudiments of such a theory of dispute in discourse; this forms the framework for the rest of the thesis. Thus, the emphasis is on general concepts and principles, which are elaborated by sub-theories e.g. rhetoric, dianoetics, strategics, logic etc. This framework is called dialectics [Gk. *dialektikç*, a concern with discussion, conversation or discourse; Barnhart p.275 1988]. Here, dialectics is viewed as the semiotics of disputes in discourse. Semiotics [Gk. *sçmiôtikos*, a concern with signs and systems of them; Barnhart p.982 1988] covers sign systems in the discourse of mind and/or community. Other associated theories are elaborations of this central conception. Philosophically, it may be considered a general approach to what is today called argumentation theory (AT). Either dialectics is identical to AT or AT is strictly a specialized study of arguments and argumentation in discourse. Though I don't give a definitive account of dialectics at this time, I endeavour to judiciously cover what I think is appropriate for further relevant elaborations by other chapters; and to deal with the primary issues of this inquiry.

First, I consider issues, opinions and disagreement in discourse. Disputes originate with issues in a discourse on a topic. I develop a view of issues as

shared problems which sometimes give rise to a decision problem. Agents tend to take some position on an issue. A position consists of an opinion (or claim) and a ground (or case). Agents take attitudes e.g. acceptance, suspension or rejection toward things, including propositions, theories etc. An opinion involves a proposition, attitude and degree of attitudinal uncertainty. Alethic opinions are called claims. A basis-of-opinion is a ground strategically developed in discourse. It has an associated support strength. A disagreement is a difference-of-opinion, which implies that disputes arise from conflicting attitudes to propositions, theories etc.

Second, I consider some general concerns regarding the nature of dispute; and the attitude of agents to them. Disputes are viewed as conflicts in mind or community that arise from disagreement. A dispute typology is developed which distinguishes fights, quarrels, discussion and debate. A critical discussion or debate is a contest of strength of positions driven by persuasion – not by force or violence – as a way of ultimately deciding which one to accept. Another concern is anti-controversy, which I can't address at this time. Contrary to controversialists, some agents prefer contentious reflection to disputation with others. Disputes can be enacted in either mind or community, though one appears to have more advantages than the other. Among those who are prepared to dispute with others, are those who deal with disagreements by means other than contest. Still, it appears that disputing in mind or community is the best way to deal with issues.

Third and last, I consider dispute development and value-driven decision-making systems. Disputes develop through stages. Currently, there is no agreed state-transition map. Here, I attempt to describe the stages of dispute using a flow chart. It is through deliberation based on some standard of dispute resolution (SDR) that a decision is made as to which position is the more acceptable one in a dispute. Where SDR is based on a jurisprudential metaphor, deliberation leads to equipollence or preponderance. Through the preponderance of the strengths of opposing positions, it is determined that one position is the dominant one. The opinion of this position is said to have been

established; according to that standard, the agent or group is said to be convinced and thus forms a conviction.

1.1 Issue and Positions

The setting of a dispute can occur in the discourse of mind or community. The OED [p.599 IV 1989] identifies an account of dialectics which clearly associates it with discourse. In *History of Philosophy*, Stanley [p.174/2 V 1701] states: "Dialectik is the Art of Discourse, whereby we confirm or confute any thing by Questions and Answers of the Disputants". This harks back to the Socratic method of Grecian antiquity which is not really the confines of critical discussion or debate. Q&A is only one argumentation scheme. Aside from this, it does focus on opposition and persuasion in discourse as central to dialectics. This suggests that dispute is a proper sub-type of discourse; that is, it is dispute-based discourse.

Corbett [p.21 1965; Corbett & Connors p.16 1999] identifies four forms of discourse, whether spoken or written. They are: narration, exposition, description and argumentation. Where argumentation is concerned, the discourse is sometimes confined to logical reasoning. But as Corbett goes on to say:

> For the classical rhetorician, logic was an ancillary but distinct discipline. Aristotle, for instance, spoke of rhetoric as being 'an off-shoot' or "counterpart' of logic. The speaker might employ logic to persuade his hearers, but logic was only one among many 'available means of persuasion'.

Persuasion and argumentation suggest a particular kind of dispute in discourse called critical discussion or debate. Disputes of this kind originate with issues and disagreement in a discourse on a topic. Here, I critically examine the notions of issue and positions associated with disagreement.

1.1.1 Issues

On issues and the controversy which surrounds them, Hume [Intro. p.41 1739, ed. Mosonev 1969] comments:

> There is nothing which is not the subject of debate, and in which men of learning are not of contrary opinions. The most trivial question escapes not our controversy, and in the most momentous we are not able to give any certain decision.

The careful consideration of issues was originally called *staseis*. The focus on issues in public speech, discussion and debate is due to Hermagoras (c.200 AD) [Lanham p.62 1968]. He noticed that conversations sometimes come to a standstill. They are due to disagreements over some point. Eventually, they became known as issues that sometimes occur in discourse. Erotetic is an aspect of dialectics which is concerned with questions and questioning. An issue is often expressed as a question; and the raising of an issue is central to any dispute. Hence, you can say that the study of issues is an erotetic study or erotetics.

Discussion, Topic and Issues. What is an issue? The term “issue” has numerous meanings. I shall focus on those relating to dispute in discourse. Under this restriction, the OED [pp.135-136 VIII 1989] defines “issue” as follows:

> ..... A point or matter in contention between two parties; the point at which a matter becomes ripe for decision. ..... A matter or point which remains to be decided; a matter the decision of which involves important consequences. ..... a choice between alternatives, a dilemma.

When we join a conversation or discussion amongst our friends and colleagues an important question on our mind is: What is the topic? Discussions can be aimless or pointless but what they are not is topicless. They have “aboutness” -- they are about something and the content associated with this is called the topic. I suppose anything amongst the information or knowledge we have can be labelled as a possible topic. It seems that not all possible topics are

discussed, only some. And the reason for this is that not all possible topics are worth discussing; and that is a value judgement by all agents perhaps with respect to the interests which make up their current agenda.

So, where does issue fit in? Suppose my thoughts are about the possibility that UFOs are space vehicles manned by intelligent beings from another world. In conversation, I bring my thoughts to the attention of others. And a discussion begins, people lay claim to positions and a debate ensues. A few other colleagues are attracted by the vigorous debate and join in. One asks:

> "What are we discussing?"

I or someone else might reply in at least two possible ways:

> "UFOs are space vehicles manned by intelligent beings from another world"; or
> "Are UFOs space vehicles manned by intelligent beings from another world?"

Both do the job. One is an assertion more in tune with communicating the topic. And the other is a question more in tune with communicating a problem. From this example, which parallels many other possible examples, there are two possibilities as to the nature of issues. They are:

(1) Topic. An issue is a topic relating to dispute in discourse.
(2) Problem. An issue is a problem relating to a dispute in discourse.

I am now going critically examine each of these options.

Where there is a discussion, there is a least one topic; and, in parallel, where there is a dispute there is at least one issue. And just as some disputes can be considered discussions of the argumentative type so too can issues be

considered as topics of the problematic type. Hence, I propose that the issue-dispute pair is a proper sub-type of the topic-discussion pair.

Issues and Problems. When we look into an issue more closely it appears to be a problem. In *Problematology,* Meyer [1982a,b; 1986a,b; 1988] proposes that contentious discourse or dispute are fundamentally concerned with problems, problem-solving and solutions. Indeed, this is their function. He calls his theory of problem-solving through discourse and dispute "problematology", which happens to be the title of his book. Like the Socratic method of Q&A by reasoning in dialogue, he emphasises problems as well as solutions. Indeed, through language, a problem-solution inter-relationship is such that each can lead to the other. For instance, consider the issue of God's existence. Does God exist? The issue may lead through dialogical problem-solving to "God exists" or "God doesn't exist". Alternatively, the claims "God exists" or "God doesn't exist" may in turn be problematised, to use Meyer's term, and thereby arrive at the aforesaid issue. Clearly then, discourse serves a dual function: to pose a question (the mark of a problem) or to give an answer (the mark of a solution). What goes on between them is problem-solving through dialogue in a particular context of ideas. Still, in a community there can be "differences of opinion" with regard to problems and solutions. Some agents or parties may take the view that the proposed solution as really solving the problem in their minds. Furthermore, the solution offered may raise new problems. There are some interesting parallels in our language use which give credence to Meyer's views. I call this pattern in our language use the problem-issue-dispute correspondence. They are:

(1) Problems are either solvable or unsolvable.
(2) Issues are either settleable or unsettleable.
(3) Disputes are either resolvable or unresolvable.

The characterisation of issues and disputes with respect to outcomes in (2) and (3) mirrors that for problems in (1). This adds some credence to the view that issues are fundamentally (shared) problems.

But what exactly are problems? The province of the problem of problems is Problematics; that is, the study of problems generally or in some discourse. This is apparent in metamathematics and computer science where the solvability and tractability of problems is studied. Clearly, problems vary in the relative difficulty of solving them. In the poem *Problems*, Piet Hein [1969] observes:

> Problems worthy
> of attack
> prove their worth
> by hitting back.

Problems resist our attempts to solve them; they make us struggle for a solution. Some may even be not theoretically or practically solvable. Such concerns belong to problematics. Sometimes the term is used for "the collection of possible problems" in a discipline [Bunge p.225 1999]. For instance, the problematics "of ontology is the collection of all possible problems concerning the most general features of reality". Returning to the problem, what might a problem be? The OED [pp.540-541 XII 1989] defines "problem" as follows:

> [It is] a difficult or puzzling question proposed for solution; ..... A doubtful or difficult question; a matter of inquiry, discussion, or thought; a question which exercises the mind. .....

This account suggests a confusion or incompleteness in our understanding. According to Bunge, a problem is "a gap in knowledge judged worthy of being filled". This harks back to incompleteness or even emptiness. However, according to Meyer [p.118 1986b] a question (or problem rather) is "an obstacle, a difficulty, an exigency of choice, and therefore an appeal for a decision". This appreciation echoes the Greek notion of *aporia* for "a situation with no way out" [Peters pp.22-23 1967]. It came to be used by Socrates and Aristotle for a difficulty, question or problem. As we go about the business of life, the most frustrating things are obstacles; that is, things which can hinder our actions. Sometimes they're objects, other times they are persons or organisations. Obstacles can be brought about by cognition alone; that is, by simply thinking about things, even thinking about thought itself. Hence, there can be obstacles

"in the head" as well as "out there". Clearly, there is at least an obstacle in the mind that is doing the contemplation. So, what can stop the mind? Well -- confusions, incompleteness of understanding or no understanding at all. It would seem that these views of the nature of problems are consistent with each other.

1.1.2 Disagreement

Controversy is put down to disagreement. But what disagreement? Sometimes disagreement is mistakenly taken for argument. Here, I use argument in the sense of discussion, debate or quarrel. To illustrate this point Staines [Lect. 2001-03] draws attention to an excerpt from the script *Argument Clinic* in *Monty Python's Previous Record* by the Monty Python crew [1972]. The scene goes like this:

> Man: That was never five minutes just now.
> Mr Vibrating: I told you I'm not allowed to argue unless you've paid.
> Man: I've just paid.
> Mr Vibrating: No you didn't.
> Man: I did! I did! I did!
> Mr Vibrating: No you didn't.
> Man: Look I don't want to argue about that.
> Mr Vibrating: Well I'm very sorry but you didn't pay.
> Man: Aha! Well if I didn't pay, why are you arguing ..... got you!
> Mr Vibrating: No you haven't.
> Man: Yes I have ..... if you're arguing I must have paid.
> Mr Vibrating: Not necessarily. I could be arguing in my spare time.
> Man: I've had enough of this.

In this excerpt, it can be seen that lines 4-6 are merely expressions of disagreement. At this stage, there is a state of disagreement amongst the persons involved. According to Staines, argument (in the sense of quarrel) occurs from line 9 onwards. There is only (the expression of) disagreement until the agents involved start to give reasons. Generally, I concur with this discourse analysis; however, I'm inclined to recognise both argumentative and non-argumentative moves where the agents involved are trying to influence -- more precisely, persuade -- each other over-and-above the mere expression of

disagreement. In section 1.2.1 it is argued that both disagreement and contest are crucial to debate (or "argument" in one sense) in discourse.

If disagreement is not argument or debate then what is it? If an opinion is offered in response to an issue and everyone agreed with it then that would be pretty much the end of the story. There would be no disagreement and therefore no dispute. There are at least two ways this can come about:

(1) The agent presents the opinion and everyone simply agrees with the opinion.
(2) The agent who made the opinion gives reason for accepting and agreeing with the opinion.

Either way, we can say the opinion is an uncontested opinion. A contested opinion is one which has been challenged in some way. Hamblin [p.6 1979] suggests that opposition can occur in at least two ways:

(1) A counter-opinion q is asserted in relation to opinion p, perhaps along with some reasons. This is a difference of opinion.
(2) No counter-opinion q is made in relation to opinion p; however, there is criticism mounted against the opinion.

Here, criticism comes down to various judgements made, perhaps with appeals and arguments for accepting or rejecting an opinion. In situation (1), there are at least two different positions in response to an issue. It then becomes a "contest" to determine the best position according to the rules of engagement that are generally agreed to by those involved in the dispute. In both philosophy and science, "rival views" are common. According to Bunge [pp.253-254 1999] "two or more views about matters of fact are mutually rival if they account in different ways for roughly the same facts". Instances of this situation are creationism vs evolutionism, idealism vs materialism etc. Bunge also proposes several criteria for evaluating rival views such as intelligibility, logical consistency, testability etc. One then checks which view complies best with these requirements. In

situation (2), there is only one position. It is just that other agents, and perhaps even the proponent, are not fully committed to the opinion. What is required is some ground by which to be persuaded or convinced one way or the other. Initially, opposing arguments are presented and these may be followed by objections and rebuttals. Another way is suggested by Sparkes [p.223 1991]. He says that "anything liable to be called in question or to become a matter of controversy is contestable". Either way, out of discussion and debate there may arise a counter-opinion.

Where opinion and counter-opinion occur, Hamblin [p.6 1979] recognises two possible relationships between them. They are:

(1) Contradiction. Agent A claims p and B claims not-p where only one can be true and the other false.
(2) Contrariety. Agent A claims p and B claims q where one can be true but both may be false.

I now discuss each relationship. First up, consider contradiction. Clearly, as disagreement occurs in discourse, so does the contradiction. Flew [p.75 1979] points out that "contradictory" is used to "describe.....a discourse containing contradictions". From a logical point of view, Blackburn [p.81 1994] points out that contradiction is "the conjunction of a proposition and its negation". That is, p & not-p. He then adds that "the law of non-contradiction provides that no such conjunction can be true: not(p& not-p). The standard of proof of the inconsistency of a set of propositions or sentences is to show that a contradiction may be derived from them". Generally, a contradiction occurs when "either of two propositions [are] so related that both cannot be true or both cannot be false" [Flew p.75 1979]. There is, however, another view of contradiction in discourse. This stems from Hegel's [1837] ontological outlook of opposing forces in Nature. Where ideas are concerned, he posits a thesis-antithesis-synthesis triad. An asserted thesis gives rise to an anti-thesis and then to a synthesis. Bunge [p.20 1999] defines the anti-thesis as "the negation of a thesis. ..... If two propositions are mutually antithetical and one of them is

true, then its anti-thesis is false". An example of this opposition would be rationalism (thesis) versus irrationalism (anti-thesis). Ontologically, Bunge is highly critical of Hegel's outlook and considers its application to the opposition of ideas as "a prime example of muddled thinking". Clearly, where contradiction is concerned, if the claim (thesis) is found to be false then logically the counter-claim (anti-thesis) has to be true. However, there is a more contentious contradiction called an antinomy. According to Bunge [p.20 1999], an antinomy is "a pair of mutually contradictory hypotheses, each of which is confirmed by a different body of knowledge. An example of an antinomy relates to the structure of space (and even time): "Space is infinitely divisible" versus "Space is not infinitely divisible". This antinomy was regarded by Kant as insoluble. Bunge points out that scientism "denies the existence of insoluble antinomies". Next, consider contrariety. Contrariety arises where two propositions in discourse are such that one of them can be true while both may be false. For example, consider these propositions:

(1) He is in his forties. (p)
(2) He is in his fifties. (q)

In this instance, p and q are contraries, since the agent referred to can't be both but might be a different age again; and therefore p and q are both false [Blackburn p.81 1994].

Thus far disagreement is "difference of opinion" [Mill p.599 1898] over something of mutual interest. In keeping with this account Willard [1989] suggests that argumentative discourse (or dispute) is a form of conversation that arises from differences of opinion. In disputes, in particular debates, there is always some issue which is the focus of the disagreement. However, it is the different positions that give rise to disagreement between them. Presumably, it's the opinions (or claims) of the respective positions.

However, Hamblin [p.6 1979] suggests we need to distinguish strong and weak types of disagreement. To appreciate Hamblin's account it is important to

recognise that he thinks agents in disputes "keep tabs" or a tally (as he calls it) of what commitments are made in conversation. For him, a strong disagreement between agents A and B is where agent B offers some counter-claim to A's claim and then engages in argumentation. Hamblin [p.6 1979] then adds:

> There is.....a weak kind of disagreement.....in which those who disagree are not in mutual contradiction. This occurs when A has made some claim and B refuses to agree to it but is not prepared to make a counter-claim. For example, B may reply to A's assertion with "I don't accept that", or perhaps "Not necessarily". These replies do not themselves amount to entries in B's tally in contradiction with A's, but merely represent a refusal to accept A's assertion; and although it remains in A's tally it does not get entered in B's.

He recognises that "for some purposes B's refusal might have to be tallied, as it were, in its own right....". This accords with common experiences. We come to know those who take such a stance as critics.

Conflict. What I have done so far is merely describe disagreements. Now I wish to explain them. Mentally, what is behind the expression of disagreement in discourse? The previous account suggests an explanation in terms of attitudes as suggested by "disposition" and conflict suggested by "opposition". What is the cause of disagreement? Barth and Krabbe [1982], in *From Axiom to Dialogue*, argue that dispute is a conflict of opinion. Fundamentally, I suggest that disagreement is caused by conflict. Thus, I'm interested in a conflict theory of disagreement. The OED [p.713 III 1989] defines "conflict" and "to conflict" as follows:

> ..... A mental or spiritual struggle within a man. .....[That is,] the opposition, in an individual, of incompatible wishes or needs of approximately equal strength; also, the distressing emotional state resulting from such opposition. ..... The clashing or variance of opposed principles, statements, arguments, etc. ..... Dashing together, collision, or violent mutual impact of physical bodies. .....

From this account, it is apparent that conflict is an abstract, general notion which admits of sub-types. It includes physical encounters between agents eg.

combat, fighting; and an internal struggle of needs, desires etc. in the minds of agents; the clash of opposing positions in a discussion or debate; and the collision of objects in space and time. However, we can logically draw from this the state or condition of opposition, the Heraclitean "strife of opposites" that was later taken up in the dialectical ontology of Hegel. As the previous OED account of conflict suggests, it is possible to distinguish conflicts of interests in agents (internal) as against conflicts between agents (external). Where inner conflicts are concerned, the OED also mentions the psychological view. In broad terms, wishes, needs etc count as interests; and they may be in opposition to one another. Where there is agentive opposition of any kind, there is conflict. Internal conflict has been likened to a pyschomachia which is Latin for "war within the mind". Cosman [p.194 1996] goes on to describe it as "a mind-battle in which conflicting ideas war for the individual's choice". She states that the term harks back to *Psychomachia* by Prudentius [4 AD], an allegory which "personified the seven deadly sins and other abstract ideas". Internal conflicts are a fact of life and are not necessarily negative to an agent's life. A dispute can be viewed as a way to achieving wisdom, including knowledge. Bishop Reynolds [XXV. 1640] in *Passions* makes this point when he says:

> An earnest contention of the minde [is necessary] in the pursuit of that good which should perfect our Natures.

There is good in some conflict generally, whether it is in the privacy of our own minds or it occurs publicly between minds. For instance, it is an opportunity to learn from our mistakes and make good our knowledge, skills, values etc. Similarly, where external conflicts are concerned, there has also been a tradition of using a combat metaphor. Conflicts between agents are sometimes described in ways analogous to physical confrontations like a fight, battle, war etc. This becomes most evident in the next section 1.2. Furthermore, in chapter 3 it is argued that, just like any kind of conflict, disputes can be conducted internally (by the self) or externally with others. Indeed, we can think of dispute as involving shared conflict resolution. Shared or not, dispute is ultimately a conflict in mind. Alternative opinions are either produced by the self's mind or by other minds in the community of which agents are members.

1.1.3 Agents and Positions

Previously, it was observed that disagreement should not be confused with argument in the sense of dispute, controversy or contention in discourse. Disagreement indicates a difference of opinion.; however, it is, I contend, only an aspect of opposition between agents. Agents take positions i.e. stances, standpoints, viewpoints, etc. in relation to some issue; and an aspect of that is holding an opinion. But what are positions on an issue? The OED [pp.165-166 XII 1989] offers a few definitions of "position". Here, my focus is on position in relation to discourse and dispute. On this, the OED states:

> ..... A proposition or thesis laid down, stated or something posited; ..... Mental attitude; the way in which one looks upon or views a subject or question: often passing into the point of view which one occupies in reference to a subject..... Fig. The situation which one metaphorically occupies in relation to others, to facts, or to circumstances; conditions

We can abstract the key features in a coherent way. For instance, a position is a point-of-view expressing a thesis, tenet, assertion etc. with reference to a subject or topic. Wuellner [p.234 1966] notes that in Scholastic philosophy "position" is defined as:

> ..... The proposition, thesis, view or stand taken, even if it be only conditionally taken for purposes of testing or debating. .....

This seems to cover the attitudinal aspect as it is ultimately some proposition that an agent expresses a preference for or against or suspends judgement. Furthermore, like a place we occupy it and presumably there are other places occupied by other agents. How can we make sense of this? Positions are sometimes presented in discourse using a soapbox metaphor [Labor 1972]; however, positions are more like a role in an organisation. The role concept is apparent in Freudenthal's [p.157 1998] preliminary account of controversy. "In controversy, each party seems to play two roles: as a proponent of his own view and as an opponent to his adversary's". Generally, agents are mere representatives of positions. They come and go but positions on an issue can

go on. Given that a position is a role, what are its key features? I contend that a position has constituency: it consists of an opinion and the basis for having that opinion, which I call the ground (or case in some contexts). Analytically, spoken and written dispute-base discourse attests to their presence.

Thus far we can say: relative to an issue, a position consists of an opinion and a ground (or case) that supports and defends it from other positions as well as opposes and attacks alternative positions. But does an agent have to accept, even be committed to the position. Normally, we would think so. However, putting aside deception for ulterior motives, there is also the possibility that an agent feign such dedication as part of competition in a debating contest or just for practice. Furthermore, Bentham [p.8 Ch.III v.6 1838] argues that a position on an issue in a dispute – as per in law – requires at least one counter-position if it is to be taken seriously. Generally, I agree; however, there are extreme circumstances. So long as the discourse is free-and-open with regard to challenges that may arise and any opposition is not hindered in any way, then a position that stands alone has to be taken seriously. A critic may attack without holding its alternative, including the logical opposite; and, at any time, an opposing alternative may appear without notice. To fully appreciate positions and this view, I think it is necessary to critically examine opinion and ground (or case) in turn.

1.1.3.1 Opinion and Propositional Attitudes

The OED [pp.858-56 X 1989] defines “opinion” as follows:

> What one thinks or how one thinks about something; [a] judgment based on grounds of insufficient or incomplete demonstration.....[and therefore] not certain or established.

Traditionally, it is more-or-less equated with “belief of something as probable, or as seeming to one’s own mind to be true”. However, where the issue is truth, I refer to alethic opinions or, simply, claims which can be beliefs or knowledge. That is, “opinion” is used here as a general covering term for propositions or

theories arising in the context of discourse. This requires qualification as there is doubt regarding the nature of theory and its relation to proposition. A theory is sometimes defined as a conjunction of propositions, which makes a theory a composite proposition. Here, a theory is restricted to a body of propositions that at least exhibits the features of relevance (to a class of domains or worlds) and coherence. Usually, an aspect of coherence is the logical consistency of the body of propositions. Furthermore, it is conceivable that an account of the body of propositions can be given In terms of the conjunction of propositions – that satisfy the aforesaid requirements. Given a standard such as the one specified above, it is possible to speak of good and bad theories.

Opinions are not just propositions or theories. Opinions are put forward by an agent in an attempt to settle an issue. When critically examined in the context of the discourse of a dispute, a number of features are identifiable. They are:

(1) An opinion is a proposition or theory p.
(2) An opinion expresses an agent's attitude toward p in relation to other possible opinions.
(3) The attitude of an agent toward p is held with some degree of uncertainty in the interval [0,1].
(4) An agent has a corresponding degree of confidence in an opinion which is determined by some basis-of-opinion.

Given these features, an opinion is more than a mere proposition. Indeed, it is a proposition with these features. I now critically examine each of these propositional features in turn, including those relating to the agent involved.

First, consider attitude. An attitude expresses a valuing of a thing; and a preference i.e. bias, propensity, tendency etc. for this thing rather than another thing. This is arrived at through some learned or innate value-based decision-making mechanism [Pugh 1978]. Garfield [1831-1881] identifies the three basic attitudes to a proposition or theory. He states:

> In the minds of most men, the kingdom of opinion is divided into three territories – the territory of yes, the territory of no, and a broad, unexplored middle ground of doubt.

The use of “territory” is indicative of how serious an agent’s or group’s attitude to a thing can become. Now I wish to define them in a more formal fashion. Where a proposition p is concerned, those attitudes are:

(1) Acceptance of proposition p with some confidence and associated uncertainty or probability of p.
(2) Withholding or suspension of judgement of proposition p with some confidence and associated uncertainty or probability of p at zero.
(3) Rejection proposition p with some confidence and associated uncertainty or probability of p.

The result is an opinion. An opinion involves a proposition (or theory) along with an attitude to that proposition. For instance, if I declare that my opinion is that "UFO's are manned space vehicles from a hidden planet in the star system of alpha centuri" then I mean that I accept as true or believe the proposition "UFO's are manned space vehicles from a hidden planet in the star system of alpha centuri ".

Second, consider attitudinal uncertainty. We can get some insight by critically examining (say) Baldwin and Stout [p.171 v.1 1901] on "certitude or certainty". They state:

> [Generally,] the degree of assurance felt with reference to something presented to the mind. [More specifically, the] .....term is employed to express degrees of belief or conviction. It is then applied to all cases from the slightest tendency to accept a proposition or fact.....up to so-called 'complete certitude', or knowledge. Certain authorities limit certitude to the highest degrees of assurance where the possibility of doubt is excluded. .....

In this account there is a subtle mingling of a number of notions. It is recognised that some terms normally associated with agents are carried over to the object. Baldwin and Stout [1901] recognize this happens with other terms and expressions. On "certainty" they say:

> Like other terms..... certitude is often carried over from the mind [of the agent] to its object and made a property of the latter; we [then] say a proposition has certitude. ..... this is legitimate as a shorthand way of saying that a proposition is fitted to arouse certitude, or has a certain to degree of probability.

I concur with Adamson, who is cited by them. The notion of "feeling un/certain" has been carried over to objects, events etc., including propositions and theories. To avoid confusion I reserve "confidence" for agents; and uncertainty, certitude and doubt for opinions and claims.

Today, there is an emerging preference to refer generally to uncertainty rather than certainty. I think this is a post-Cartesian recognition that being uncertain is the natural fallibilist state of agency. In his *Effectual Faith*, Preston [p.24 1631] counsels: "We may say of doubting as we say of Thistles, they are ill weeds, but the ground is fat and good where they grow". This emphasis on uncertainty and doubt is apparent in modern science and even mathematics. The term is used in many contexts for imprecision in measurement in physical systems (physics, chemistry); ambiguity and vagueness in language (linguistics); lack of clarity in debate (law) including risk and insurance in financial matters (economics). They suggest a bias for using the term "uncertainty" over "certainty" where empirico-theoretical studies are the concern. Unlike other disciplines, mathematics has a bias for "certainty". However, with the demise of Hilbert's program and the theorems of Gödel there has emerged a reluctant appreciation for uncertainties where mathematical structures are concerned. Typically, an agent can have full certainty (certitude) or partial certainty, which may be viewed as reflecting the gamut of certainties from full to none. With the rise of probability theory and issues regarding its application, degrees of uncertainty have come to be recast in terms of some probability conception. The use of "probability" rather than "uncertainty", I think, is misleading if not a

downright conceptual confusion. Perhaps it is due to numerical similarity. Granted, some propositions are about the probability of events; however, whether or not this can be applied to propositions themselves is uncertain. I critically discuss the problem of probability conceptions in the last chapter 5 and propose a reconciliation. For now “probability” is another term for “uncertainty”.

Third and last, consider confidence. A fundamental condition of agency is having confidence, certainty or assurance in an opinion, claim etc. Language use suggests that confidence has the greater compass so it will be the starting-point. The OED [p.705 III 1989] defines it as follows: “The mental attitude of trusting in or relying on a person or thing; firm trust, reliance, faith. ..... The feeling sure or certain of a fact or issue; assurance, certitude, assured expectation”. The OED also suggests that confidence can be good or bad. Where it is bad, “assurance [is] based on insufficient or improper grounds; excess of assurance, over-boldness,.....presumption, imprudence”. This is an apt warning of the dangers of having unwarranted over-confidence let alone having unwarranted under-confidence. Clearly, it is an agent that has confidence in a position, including the associated opinion and ground.

Opinions are only one part of a position on an issue. What I wish to do is to relate opinion to its position using the above features. This is simply stated using the following schema:

> P: X is worth accepting/rejecting, with some degree of attitudinal uncertainty, because of the persuasive support strength of some ground (or basis-of-opinion) Y.

where:

> P = Position
>
> X = Issue, opinion, claim, appeal, argument, ground (or case).
>
> Y = Appeal, argument, ground (or case).

The intellectual value system of the agent is expressed through some discursive unit Y. It is the value-laden basis for accepting or rejecting X. “Acceptance” and “rejection” are not just names for the performance of a linguistic act.

Taking a position involves taking an attitude toward a proposition p with some degree of uncertainty assigned to it and a corresponding confidence of the agent itself. It is then called an opinion. For instance, on the issue “are UFO’s hoaxes?” there are three possible positions i.e. stances, standpoints on can take: This is illustrated by van Eemeren, Grootendorst and Henkemans [p.5 2002] by way of the positions signalled by three characters in conversation:

Dan: I think UFO’s are a hoax.
Paula: I don’t think UFO’s are a hoax.
Alice: I don’t know whether UFO’s are a hoax or not.

Respectively, they are taken to be positive, negative and neutral standpoints regarding UFO’s as a hoax. Here, Dan and Paula are fairly certain of their position and are clearly in opposition to one another. This is necessary for there to be a difference of opinion. As for Alice, she is in doubt but there is still opposition.

Can we ever truly know an agent’s opinion? If we could read minds then we would know. That would be direct knowledge. However, there is a privileged access of the mind that prevents this. Indirectly, we might resort to polygraphs, truth serum or brain imaging. But normally, we rely on:

(1) Our profile of the agent developed over time.
(2) Conversational habits of agents generally.
(3) Clues in dialogue with the agent.

Simply, we use what we know about agents to infer the likely real commitments or beliefs they have.

Broadly, people tend to have two faces they present to the world: a public and a private face. The person eg. friend, colleague, parent etc. who I know privately may present themselves differently in public such as at a party, conference, lecture etc. The extent of disparity may depend upon factors relating to a personality, convictions, context, situation or any combination of factors. Propositional attitudes e.g. acceptance, suspension (or withholding) and rejection may be public or private as in table 1.1. In public an agent may accept opinion p and others are aware of this. However, in private, agents really reject p. By private I mean as revealed only to the self or trusted others, those who are members of one's inner circle. Depending on circumstances, there are usually vested interests that give rise to a difference in private and public acceptance of p. Grice [1975; 1989] point to a maxim of truthfulness in conversation, that people usually act and expect others to act in transparent ways.

Regardless of this distinction there is a privileged access to the truth of an agent's acceptance, withholding or rejection of something. They may even be not sure. The self is the only one who has direct access to its own mind. Others can only access it indirectly if at all. Hence, the acceptance-rejection distinction in dialogue allows for these possibilities:

(1) The agent is certain of its position on issue p and truly reveals it to others.
(2) The agent is certain of its position on issue p but reveals otherwise to others.
(3) The agent is uncertain of its position on issue p and reserves judgment.
(4) The agent makes a mistake (gets it wrong) about itself.

I think all the possibilities are taken in the light of the agent's interests in relation to prevailing circumstances. This, in my view, is what gives rise to a possible difference between an agent's acceptance/rejection of an opinion p on the one hand as against its non-/commitment on the other hand.

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Types	**Public (extrinsic) Attitude**	**Private (intrinsic) Attitude**
Proposition	OPINION	COMMITMENT OR CONVICTION
	Publicly expressed/held proposition.	Privately expressed/held proposition.
Alethic Proposition	CLAIM	DIS/BELIEF
	Publicly expressed/held alethic proposition.	Privately expressed/held alethic proposition.

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Table 1.1 Propositions and Attitudes. A proposition (including theory) along with an agent's attitude toward it defines an opinion or claim. An agent has both a publicly and privately expressed or held opinion which may or may not be the same, depending on circumstances.

1.1.3.2 Appeals, Reason and Ground

Where there is more than one position on an issue, there is a "difference of opinion" and therefore disagreement between agents or groups. There is the potential for further opposition in discourse. Notions like support and opposition are used to describe relationships between agents and their positions is prior to their use in characterising appeals and arguments. The poem *The Twins* in *Hide and Seek* by Morley [1920] illustrates this point:

> Con was a thorn to brother Pro--
> On Pro we often sicked him:
> Whatever Pro would claim to know
> Old Con would contradict him!

This appears to be a description of agents at play. Such an agent-oriented approach is taken by Barth and Krabbes [1982] in *Axioms to Dialogue* under the banner of formal dialectics. They give an account of standpoint, proponent/opponent (roles), attack/defence, concession etc. Apostel [1982] also takes agentive action to be central to our understanding of debates. He argues that roles of and relationships between agents eg. proponent, opponent, attack and defence -- naturally arise from "inter-actions" of agents. All this is well and good. But I found this poem curiously interesting because it raises a few puzzles. What kind of opposition is present? At least there is actual disagreement while the names suggest the potential for a contest of persuasive strengths. Disagreement doesn't seem enough for debate; however, where there is contest as well, then it seems there a debate or quarrel. Does opposition occur between agents or positions? Morley might well be describing sibling rivalry but then again he might be personifying the intellectual struggle of different "schools of thought" in discourse. Both accounts, irrespective of Morley's poem, are reasonable and plausible accounts. Sure, agents do take up positions on an issue. But what does this mean? I think it is analogous to "filling a position" which has become vacant in an organisation. People come-and-go but positions go on so long as there is a requirement or need for such a position in the organisation. As stated previously, it is like "taking up" or "playing" a role.

Indeed, a position in an organisation typically has a job description which specifies the function they must carry out; in other words, their role in the organisation. Equally, we may liken positions to roles in the discourse of a dispute. This makes even more sense if disputes last across generations.

There is a tradition of conceiving disputes in discourse as *pro et contra*; that is, for (pro) and against (con) a position or opinion on an issue. The OED [pp.533-534 XII 1989] characterises “pro-and-con” as follows:

> ..... For and against: in favour and in opposition; on both sides. ..... pl. Reasons for and against; reasons, arguments, statements, or votes on both sides of a question. ..... to weigh the arguments for and against; to debate both sides of a question.

According to Sparkes [p.222 1991], “pro and con” are attitudinal concepts. On this point he states:

> Arguments pro and con some [opinion] are *arguments for* it and *arguments against* it. ..... Attitudes pro and con are attitudes favourable and unfavourable. To have a pro-attitude towards X is to be favourably disposed towards X; to have a con-attitude towards X is to regard X unfavourable.

The notion of pro-and-con suggests that a more general notion than appeal, argument, reason etc. is required to bundle together in some way the various forms of support and opposition expressed in language in relation to a position on an issue.

Ground, Case and Weight. The notions of ground and case along with their aggregated persuasive strengths appear to meet this requirement. The case concept is familiar to courts-of-law. With reference to the context of disputes in discourse, the OED [pp.875-882 VI 1989] defines “ground” as follows:

> ..... A circumstance on which an opinion, inference, argument, statement, or claim is founded, or which has given rise to an action, procedure, or mental feeling; a reason, motive. Often with additional implication: A valid reason, justifying motive, or what is alleged as such. .....

Other meanings relate to the bottom of things eg. sea, well, ditch, vessel, Hell etc.; the foundation of an edifice eg. building, bridge etc.; the fundamentals of a branch of knowledge; a prepared surface; the surface of the Earth etc. In all, there is the sense of a basis or foundation to support something. Thus, when applied to appeals it is any mental basis, whatever its origin or form, that directly or indirectly supports or defends. Though the entry alludes to classical proof-like qualities eg. validity, there is really no necessary requirement of rational norms or standards. I think this is appropriate because there are appeals that people submit to, consciously or otherwise, which are not acceptable under some if not all positions on the primacy of Reason and rationality. Realistically, such appeals have to be taken into account whatever one's position. In referring to a ground as a mental basis, what is meant by this? To appreciate this, it is necessary to view the ground for a claim in the context of discourse and dispute. An agent may become involved in a dispute at any stage in a discourse on an issue of controversy. It may do so through reading articles, attending seminars and conferences or just conversing with colleagues. Through time the agent is exposed to and perhaps even thinks up various appeals, arguments, backings, objections, rebuttals etc. The accumulative impact is a ground with an overall persuasive impact on the agent.

In law there is an, albeit intuitive, notion of accumulated persuasive impact called "the weight of evidence". Presumably, each piece of evidence is assigned some (persuasive) support strength in relation to the probability of the truth of the claim. For instance, Jack is accused and charged with murdering Jill in what seems to be an unfortunate accident while collecting a pail of water from a well. Indeed, Jack claims it was an accident and that he did not murder Jill. His defence attorney bolsters this claim by presenting evidence-based arguments in support and defence of this claim. Throughout the court proceedings, the aim of the defense and prosecution is to develop a case with a weight of evidence that the jury considers meets the standard of proof. Many other court-cases like this one have a similar strategic outlook. What is of interest here is the notions of "support strength" and "weight of evidence". I also intend to generalise these

notions so they apply to any ground or case. This appropriation is not new. Campbell [p.53 1841], one of the founders of modern rhetoric, expresses a similar view. He states:

> In.....reasoning.....there is often a combination of many distinct [forms] of argument, no way dependent on one another. Each hath a certain portion of evidence belonging to itself, each bestows on the [opinion] a particular degree of likelihood, of all which accumulated, the credibility of the [opinion] is compounded.

Here, it appears that “argument” means the various modes of persuasion in critical discussion or debate. A similar view is fully developed in chapter 3. Here, a ground consists of various appeals, some of which are arguments. The weight of a ground or case is its accumulated net persuasive strength. This net strength is the addition of all persuasive strengths of the persuasive moves -- they being various appeal forms and perhaps argument forms used in the dispute. These notion are technically developed further in the next chapter.

Given the notion of ground, it is conceivable that a ground may consist for the most part only of arguments. This is the kind of ground preferred by those who uphold the primacy of Reason and some notion of critical rationality. Such grounds are looked upon favourably in mathematics, science, law, medicine etc. A notion which is or at least comes close to being a rational ground is the notion of case used in law. The term “case” has various meanings like a happening to someone, an instance or an occurrence of a thing; even an infatuation between two people, a state of affairs, enclosure etc. What is of interest here are those meanings relating to critical discussion and debate. On this, the OED [p.934 II 1989] defines “case” by reference to the law. They include:

> The state of facts juridically considered. (a) A cause or suit brought into court for decision. (b) A statement of the facts of any matter sub judice, drawn up for the consideration of a higher court. A cause which has been decided: leading case, one that has settled some important point and is frequently cited as a precedent. .....

> The case as presented or 'put' to the court by one of the parties in a suit; hence, the sum of the grounds on which he rests his claim. Also, fig. as in to make out one's case .....
>
> An incident or set of circumstances requiring investigation by the police or other detective agency. .....

Of the three entries, it is the second one which I focus on. This entry would be familiar to many people due to the public exposure of court proceedings through the media. Indeed, the first and third entries relate back to it. There is cause (or position on an issue), there are facts relating to some situation (typically of the past) and there is an investigation to collect facts. Because they all relate to a ground for making a claim, they have been tagged with "case" having different senses but relating to case-as-ground proper.

1.2 Dispute, Controversy and Debate

There are some general concerns regarding the nature of dispute and the attitude of agents to them. Disputes can be viewed as conflicts in mind or community arising from disagreement. A dispute typology is developed which attempts to distinguish fights, quarrels, discussion and debate. A critical discussion or debate is a contest of strength of positions that is driven by persuasion – not by force or violence – as a way of ultimately deciding which position is the better or best one to accept. Another concern is anti-controversy. Unlike social controversialists, some agents prefer contentious reflection within the self to non-contentious co-operation with others. Among those who are prepared to dispute with others, there are those who deal with disagreements by alternative means. Views that deal with these concerns are ideologies about the governance of dispute, specifically discussion and debate. Such views may give rise to coalitions called regimes that actively support an approach to disputing in a community. Here, I critically examine these concerns with a view to a better understanding of disputes generally and critical discussion or debate in particular.

1.2.1 Dispute Types

What exactly are disputes? What might be useful is to critically look at what Rapoport [1960] says in *Fights, Games and Debates* as a way of getting at the essence of dispute and its cognates. Rapoport makes the following distinctions:

(1) Fight. A system of engagement where the purpose is to win and change the adversary by removing all resistance without necessarily eliminating them.
(2) Debate. A system of engagement where the purpose is to modify the opinions, claims etc. of the adversary.
(3) Game. A system of engagement where the purpose is to win a contest strictly by rule-governed interaction.

He recognises that all systems of engagement involve some level of rule-governed activity. At this point I remain uncommitted with regarded to the accuracy of his distinctions. In what follows I undertake my own conceptual analysis. I rely on the OED as a record of language use along with philosophical insight from elsewhere. In doing so, I add to the above list, the following: dispute, quarrel and discussion. My primary concern is with understanding debate – typically associated with opposition, persuasion, regimentation and reason – in a typology of disputes

Dispute Typology. A dispute typology is a classification scheme of the different types of dispute. The primacy of the dispute concept is highlighted by this definition from the OED [pp.827-828 IV 1989]. It defines “dispute” as follows:

> An argumentative contention or debate, a controversy; also, [a] in weakened sense, a difference of opinion; freq. with the added notion of vehemence, a heated contention [or] a quarrel. ..... An oral or written discussion of a subject in which arguments for and against are set forth and examined. ..... Strife, contest; a fight or struggle.

Through this comparison, it is possible to identify at least four fundamental features of disputes. By inspection and modest interpretation, they are:

conversation, opposition, organisation and persuasion. Thus, the disputes of dialectics (in the strict sense) are multi-agent systems in which the agents engage in organised opposition and use various means of inter-agent influence. Clearly, opinion and opposition is central to dispute. Furthermore, various types are identifiable under the umbrella term of "dispute". They include: discussion, debate, quarrel, fight etc.

First and foremost, I shall consider a comparison raised by Rapoport's conceptual analysis. Disputes, along with other social activities amongst agents or groups, are often compared to games. Informally, the OED [pp.344 VI 1989] defines "game" as follows:

> Amusement, delight, fun, mirth, sport. ..... An amusment, diversion, pastime. ..... a diversion of the nature of a contest, played according to rules, and displaying in the result the superiority either in skills, strength or good fortune of the winner or winners.

Interestingly, the term is the basis for a variety of phrases which suggest, in my view, the richness of a game metaphor in describing agent activities. This was realised long ago and in earlier times inspired the game theory of von Neumann and Morgenstern [1944] which they develop in *Theory of Games & Economic Behaviour*. According to Kuhn [p.2 2003] the central problem of game theory was posed by von Neumann as early as 1929 in Göttingen. The problem is:

> If n players P_1, ..., P_n play a game G, how must the ith player, P_i, play to achieve the most favourable result for itself.

According to Koller [1999], game theory is "a unified theory for rational decision-making in multi-agent settings". Unlike decision theory, it studies situations in which agents affect one another in ways like threats, promises, co-operation, conflict etc. Traditionally, the focus has been on rational decision-making. There are contentious issues associated with the game-theoretic framework which I can't go into at this stage; however, what appears to motivate the application of a game metaphor is the common features of contest and perhaps regimentation

(that is, the regulation of conduct by rules and codes). The OED [p.819 III 1989] defines “contest” as “[a] struggle for victory or a desired object, or in defense; [it is] conflict, strife [or] contention. .....”. Thus, disputes are like games in the sense that they are at least contests; the conduct of agents is more-or-less regulated by rules of engagement or some code of conduct; and there is an intent to overcome an opponent or win is some sense.

Now I turn to the different kinds of dispute. First, consider fighting. The OED [pp.892 V 1989] defines “fight” as follows:

> The action of fighting. ..... A combat, battle. ..... a hostile encounter or engagement between opposing forces. ..... A combat between two or more persons or animals. ..... [It] suggest[s] primarily either the notion of a brawl or unpremeditated encounter, or that of a pugilistic combat. .....

A closely related notion is combat. It primarily relates to battles in a war. The OED [pp.512-513 III 1989] defines “combat” as

> An encounter or fight between two armed persons (parties, animals, etc.) e.g. a dual. [Also,] a fight between opposing forces; [such as a] struggle [for] contest; usually [it is] on a smaller scale than a battle.

Clearly, fight, brawl and combat are closely related in meaning. The implied common feature is physical contact and harm. It is hard to imagine physical harm not being followed or accompanied by psychological harm of some kind. This is critically examined in section 3.1 of chapter 3 concerning inter-agent influence.

Second, consider quarrel. The OED [pp.985-986 XII 1989] defines “quarrel” as follows:

> ..... A cause for which one person has unfriendly or unfavourable feelings towards another; also, the state or course of hostility. .... A violent contention or altercation between persons; or of one person with another.

Clearly, quarrels involve emotional outbursts. In their analysis of quarrels, Woods and Walton [Ch.1 1982] put this down to frustration leading to aggression. They further state:

> As anyone who has ever had.....a [quarrel] knows, it can be abusive and inconclusive. Admittedly, sometimes such arguments are great fun; yet more often they are a nuisance for, or an impediment to reasoning.

They put quarrels down to a failed attempt to reason separately or together in the one conversation. Woods and Walton [pp.3-4 1989] offer this account:

> When there is no common ground, there is no argument; instead, there is a multiplicity or plurality of unconnected arguments. Small wonder, then, that the quarrel tends to be neither productive nor enlightening from a logical point of view.

They then propose that

> A [dispute] is a quarrel if it suffers from premissory or conclusional instability or both.

Premissory instability occurs when the disputants “have few or no premisses” in common; whereas conclusional instability occurs when, even if there is some agreed premises, there is no conclusion drawn in common. They add:

> It is easy to see why quarrels are such noisy, personal and inconclusive affairs. If, as in the case of premissory instability, we cannot even get started on the road to agreement, then frustration, accusation and hurt feelings are bound to occur.
>
> Similarly, having got the discussion nicely under way with some basic premissory agreement, things might come grinding to a halt owing to a lack of common conclusions. Then the same personal disruptions could occur.

They then ask:

> Why, then, do contenders in such [disputes] become quarrelsome? With no prospect of getting started and no prospect of reaching a conclusion, they have nothing left to do but fight. The moral seems to be: premissory

> instability and conclusional instability cause frustration; frustration causes aggression.

Both the OED and the Woods-Walton explanation of quarrels suggest a key indicator. Reference to emotional outbursts, frustration and "hurt feelings" imply that quarrels involve psychological harm arising from conversation of some kind.

Third and last, consider controversy, discussion and debate. Within the compass of the dispute typology, an attempt is made to distinguish these closely related dispute sub-types. Dascal [pp.149-50 1998] makes a similar attempt to distinguish controversy from dispute and discussion. His distinctions are based on the difference between solving, dissolving and resolving disagreement. Though I don't critically examine Dascal's typology here, I'm unconvinced by this approach. The starting-point of my approach is controversy.

Hobbes [p.xiii 1650] marks the presence of controversy as follows: "the signs of two opinions contradictory one to another, namely affirmation and negation of the same thing, is called controversy". Zuber [p.181 1998] offers a more detailed account of this. Relying on Aristotle's *Topics*, he is interested in applying a "dialectical model", "widely agreed upon", to the historical exchanges recorded by Galileo. Zuber attempts to summarise them as follows:

> Controversies express themselves in a series of exchanges, where each disputant speaks in turn, asks and answers questions, clarifies meanings, gives or refuses assent to the opponent's thesis, elaborates objections, and sets conditions for the truth of the opponent's claims ..... [They] present both a subjective and object aspect.

As an afterthought, he further points out that "controversies.....also involve, to a greater or lesser extent, a moral as well as a political component". The OED [p.855 VIII 1989] more-or-less offers a similar account of controversy. So far, "controversy" seems to be just another term for "critical discussion or debate".

Still, can a distinction be made? If so, is it philosophically worthwhile to do so? Maybe not. As Freudenthal [Fn.1 p.156 1998] points out:

> The concept, “controversy”, is rarely discussed, but usually used in its colloquial sense as synonymous with or close in meaning to “dispute,” “discussion,” and the like.

The entry for “controversy” in the OED [p.855 VIII 1989] is in accordance with this view. Intuitively, these concepts seem to be related in one way or another. Discussions can be about any topic of interest and need not involve disagreement. When they do, we are inclined to say we have a dispute on our hands. Thus, a dispute in one sense involves a discussion centred on a disagreement over “some issue of controversy”. This seems to be encapsulated by the expression “discussion and debate”. Now “controversy” as the prior expression suggests, may actually be reserved for an aspect or kind of critical discussion. Some reasonable and plausible possibilities are:

(1) A high level of discursive activity arising from an issue in a critical discussion or debate or something more.
(2) A long-term episodic critical discussion or debate; that is, a dispute involving more than one group of participants and/or occurring over time and perhaps over generations.
(3) A critical discussion or debate involving an issue of great importance to the interests of those agents involved.

Other than these possibilities, “controversy” is merely an older term for critical discussion or debate.

Given that controversy is semantically equivalent to critical discussion or debate, I now focus my attention on them. The OED [p.761 IV 1989] defines “discussion” as follows:

> [The] examination or investigation (of a matter) by arguments for and against; [or] ‘the ventilation of a question’. ..... An argument [in one

> sense] or debate with a view to establish a point or elicit truth; [or] a disquisition in which a subject [or topic] is treated from different sides.

When compared, discussion seems to be at least equivalent to or more encompassing than debate. The OED [pp.309 IV 1989] defines “debate” as follows:

> Strife, contention, discussion, quarrelling, wrangling; a quarrel. ..... Contention in argument; dispute, controversy, discussion; esp. the discussion of questions of public interest in parliament or in any assembly. .....

Debates conducted by debating societies are other examples. But is a debate a discussion? Yes, it would seem so. Indeed, there are similarities. The expression “discussion” and the nature of dialectics suggest both are concerned with conversation. However, debates suggest even more. Firstly, debates are not merely disagreements. A disagreement is a necessary but insufficient condition of debate It is merely a prelude or initial condition. Given that a disagreement is essentially a difference of opinion, the remainder of the debate tends to involve attempts to dispel this difference by discussion. However, this is not just any discussion – it is one of contention. Thus, debates involve disagreement and contest. Secondly, debates appear to be a more regulated form of discussion. For example, experience and access to records attest, rule-and-regulation is an essential ingredient of parliamentary debates and debating contests. Given all this, conceptual clarity may be gained by distinguishing contentious from non-contentious discussion. Thus, debate is a contentious discussion; and where there is an emphasis on rational judgement and argument, one may refer equally to critical discussion. The so-called *débat* highlights this rigour. In its entry on “debate”, the OED [p.309 IV 1989] identifies a “type of literary composition”, which goes by the French name *débat*, that takes “the form of a discussion or disputation, commonly found in the vernacular medieval poetry of many European countries as well as in medieval Latin”. On this form, Chambers [I. iv. p.79 1903] states:

> The *débat*, is a kind of poetical controversy put into the mouths of two types or two personified abstractions, each of which pleads the cause of its own superiority, while in the end of the decision is not infrequently referred to an umpire in the fashion familiar as the eclogues of Theocritus.

Regardless of being a poetical form, what makes for a debate is a regimented struggle for superiority or victory over the opponent in conversation by means of (rational) persuasion between agents in opposition.

In certain respects, agents in a quarrel seem to be endeavouring to do the same as in a debate. Both are at least conducted through conversation. What then distinguishes discussion/debate from quarrels? Woods and Walton [p.17 1982] propose the following:

> The debate appears to have more structure and orderliness than the quarrel. ..... In a debate, there are winners and losers, and definite rules determine the outcome. ..... Like the [quarrel]. The object of a debate can be to frustrate the rightful rôle of reason; like the quarrel, the debate can be a noisy, personal and fractious affair. In fact, a failed debate may quickly deteriorate into just another quarrel. [Overall,] a quarrel as we said, is the *anarchy of argument*. Debates are rule-governed enterprises, presided over by a referree [in some form] who is bounded to fairness and objectivity.

This account is influenced by the views of Mill [1859], especially those expressed in *On Liberty*. In a similar spirit, they critically examine two forms of debate, one found in a court of law and the other in parliament; however, this is not important to the concerns addressed here.

It is worth noting that there are affinities between debate on the one hand; and quarrels and fighting on the other hand. This is suggested by the use of a combat metaphor in characterising the activities of agents in discussion. This is aptly captured in the following excerpt from the *Faerie Queen* by Spenser [FQ. vi. viii 14 1596]. It is suggested by the entry for “discourse” in the OED [p.750 IV 1989]. He characterises the course of action in a debate as follows:

> The villiane.....Himself addrest unto this new debate, And with his club him all about so blist That he which way to turn him scarcely wist: Sometimes aloft he layd, sometimes slow, Now here, now there, and oft him neare he mist..... At last the caytive, after long discourse, when all his strokes he Saw avoyded quite, Resolved in one t'assemble all his force.

Spenser's passage describes conversational moves as analogous to the moves of agents in a fight. What this combat metaphor suggests is that agents engage in patterns of conversational moves which may be likened to a combat in an arena or on a battleground. Recently, in *Metaphors We Live By*, Lakoff and Johnson [pp.4-5 1980] identify and discuss what they called an argument-as-war metaphor that informs our understanding of debates in everyday discourse. This is another name for what I call a combat metaphor. They state:

> This metaphor is reflected in our everyday language by a wide variety of expressions:
>
> > Your claims are *indefensible*.
> > He *attacked every weak point* in my argument.
> > His criticisms were *right on target*.
> > I *demolished* his argument.
> > I've never *won* an argument with him.
> > You disagree? Okay, *shoot!*
> > If you use that *strategy*, he'll *wipe you out*.
> > He *shot down* all of my arguments.
>
> It is important to see that we don't just *talk* about argument in terms of war. We can actually win or lose arguments. We see the person we are arguing with as an opponent. We attack his positions and we defend our own. We gain or lose ground. We plan and use strategies. If we find a position indefensible, we can abandon it and take a new line of attack. Many of the things we *do* in arguing are partially structured by the concept of war. Though there is no physical battle, there is a verbal battle, and the structure of an argument – attack, defense, counterattack, etc. – reflects this.

This and other metaphors not only structure what we do but also how we understand what we do. Perhaps what we are seeing here is a more-or-less shared abstract conceptual system of understanding that subsumes our understanding of war, fights, quarrels, discussions, debates etc. It is therefore a small wonder that our language of dispute reflects that commonality. But, in the

end, is a discussion really a fight? Perhaps not. Granted, there are similarities. One is a battle of bodies while the other is a battle of minds. The expression “opposing forces” and the nature of dialectics suggest both are merely concerned with opposition and contest.

Finally, I draw together the definitional threads of this conceptual analysis into one tapestry shown in figure 1.1. It illustrates the proposed typology of disputes and their inter-relationships. Generally, disputes are concerned with opposition and contest between agents or groups. Distinctions between the dispute sub-types is based on inter-agent influences that were previously highlighted and critically discussed in more detail in section 2.1. of the next chapter. Debate is a sub-type distinguished from quarrel and fighting by the absences of harm (or violence) and the presence of a common ground of rules-and-regulations. Quarrel is a sub-type of debate that displays the prominence or psychological harm and perhaps a breakdown of “law and order” normally present in discussion or debate. Fights are a sub-type that primarily involves physical harm and violence, which is antedated or accompanied by psychological harm. Furthermore, there is usually no common ground in the conduct of fighting. However, a higher or more powerful authority may insist compliance with certain rule-of-engagement and penalise accordingly; or there might be some imposition in retrospect by the victor on the defeated party.

1.2.2 Force vs Persuasion

As experience attests, disputes display different amounts of contentious activity. Conversations can get quite emotional at times, especially where vested interests are involved -- which is usually the way it is. This is highlighted by a pattern of escalation that ranges from discussion to quarrel and then to fighting as shown in figure 1.2 further on. Here. I critically discuss the pattern of escalation amongst dispute forms; and the various philosophical attitudes, especially those relating to the use of force and persuasion.

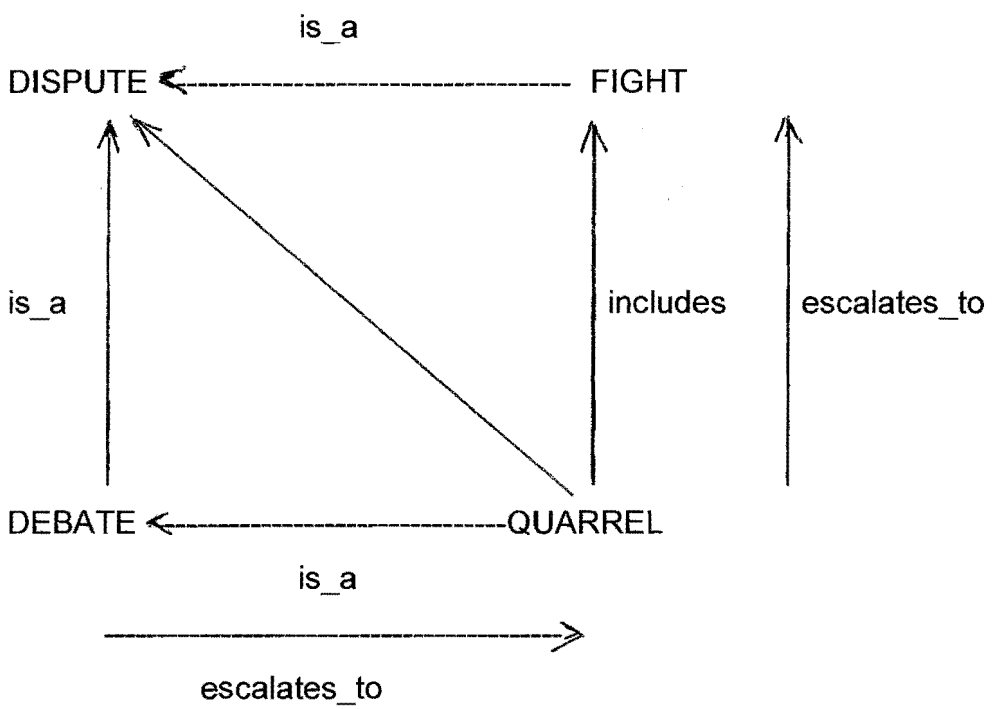

Figure 1.1 Dispute Typology. A classification scheme of the different types of disputes. from discussion/debate are distinguished from quarrels and fighting by the absence of harm (and violence) and the presence of a workable common ground of rules-and-regulations. Also, there is an de/escalation order amongst dispute types.

Grades of Contention. Critical discussions or debates over issues of controversy can range from being friendly to being quite acrimonious; and this seems to be mirrored in the contentious activity between those involved in the dispute. The OED [pp.817-818 VI 1989] defines “contention” as follows:

> The action of straining or striving earnestly; earnest exertion, effort, endeavour. ..... The action of.....striving together in opposition; strife, dispute [or] verbal controversy. ..... A contest, rivalry or competition.

Situations identified by the OED that are associated with contention are disputes generally, fights, quarrels, debates etc. The term is variously applied to some action, opposition of agents, test or contest. Central to all of them is activity that involves striving, strain or exertion to some degree. Herein we are logically entitled to get the impression of grades of contention.

How then can contention be usefully graded? Attempts at developing a scale of contention are not new. In the article *The Statistics of Deadly Quarrels*, Hayes [pp.10-15 2002] reports on early research into such scales by Richardson [1960a, b]. He was inspired by the magnitudinal scales of brightness used in astronomy. Interestingly, brightness scales also inspired Richter’s scale of magnitudes for the energy release during earthquakes. For Richardson, the focus was on wars and the deaths caused by them. By analogy with magnitudinal scales for brightness, a similar scale for conflict was proposed based on a death count. Experience shows that not all disputes affect the mortality of populations. For example, quarrels involve a heated exchange of words and even an exchange of blows, if not an outright bust-up or fight. Blood may flow with words, people may suffer hurt and injury -- but no deaths occur. Now I don’t want to discount the damage to life and to the infrastructure of society where civil war is concerned, but I think it is possible to have grades of contention based on (say) the impact on (perceived) interests.

Impact, as with physical systems like a car collision, may be measured by an energy notion such as work done or something similar. If we carefully examine our language use when we describe disputes over issues of controversy, it

suggests an analogous work notion such as degrees of contention. Here are some expressions which evidence this point:

heated discussion
hotly contested issue
heated exchange
hot topic
cool response
cooling-off period
cool indifference
cold-hearted comment
.
.
etc.

These expressions seem to rely on a heat-temperature metaphor. Something about the activity of a dispute is analogous to the activity of matter under heat conditions. Where matter is concerned e.g. water, we can dip a thermometer into it to get a temperature reading. Technically, temperature (degrees Celsius, ^{o}C) correlates with the heat or thermal energy (Joules, J) of the water or internal kinetic energy (Joules, J) of its particles. Likewise, we may conceive of a "contentiometer" which measures the degree of contention in a dispute associated with the activities of the agents just as a thermometer measures the temperature associated with the activity of particles in matter. This is shown in figure 1.2. Of course, there is a difference. Agents are not particles -- they can be proactive as well as reactive. Still, their verbal and non-verbal activity has a character of contention which enables us to distinguish disputes.

Using the scale I have intuitively tried to order the various kinds of disputes like discussion, debate, quarrel, fight etc. based on the previous conceptual analysis. It attempts to capture the escalation of dispute. Where is the cutoff line for dialectics? We could envisage a wide notion of dialectics that takes into account conflict generally.

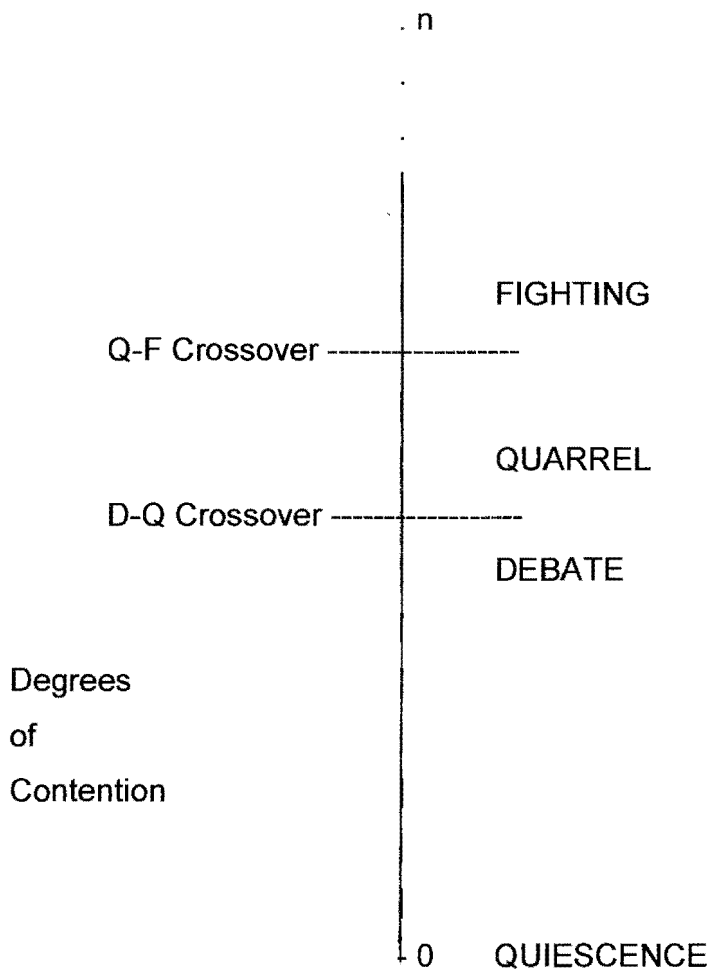

Figure 1.2 Scale of contention. Based on heat-temperature metaphor, it is possible to envisage a scale of the "temperature" of contentious activity i.e. "the heat of debate" in a dispute. Escalating or de-escalating contentious activity can increase or decrease the degree of contention.

Alternatively, we could stay with a narrow notion which confines dialectics to discussion, debate and quarrel. If we remain with the traditional take, then where do we “draw the line”? Clearly, there are two crossovers which highlight the escalation of dispute in discourse. One is the debate-quarrel crossover and the other is the quarrel-fight crossover. I critically discuss each in turn. First up, there is the debate-quarrel crossover. In *The Idler*, Johnson [No.23 1758-60] apparently describes this crossover. He says:

> A dispute begun in jest.....is continued by the desire of conquest, till vanity kindles into rage, and opposition rankles into enmity.

We may query the motivation but the point here is the escalation of contention between agents. A transition line may be drawn where the contention is marked by psychological harm and perhaps rule violations. Next, there is the quarrel-fight crossover. In *Lacon,* Colton [1.5.34 1825],though perhaps inadvertently and tacitly, describes the borderline between quarrel and fighting. He states:

> Wars of opinion, as they
> have been the most destructive,
> are also the most disgraceful
> of conflicts, being appeals
> from right to might and from
> argument to artillery.

Experience shows that quarrels can become highly contentious to the point where some agents start to “push and shove” one another and then perhaps “throw punches”. Thus, I’m inclined to draw the line between quarrel and fighting as previously shown in the previous figure 1.2. I take an exchange to be a fight where there is deliberate physical contact between agents that does some harm. I take a change from quarrel to fight where actions do physical (along with psychological) harm.

Attitudes and Approaches to Disputes. An immediate question that follows from the scale of contention is: should disagreement be dealt with by violence e.g. threats, bullying, fighting or by persuasion? This is the old force vs persuasion problem. Experience suggests that, broadly speaking, agents have different

approaches to inter-agent influence. This is particularly evident when there is disagreement and debate. These approaches, in my view, are best understood as kinds of strategic tendencies or propensities. It is generally appreciated in disciplines like psychology, politics, intelligence, the military etc. that there are three styles of inter-agent influence. These propensities centre on the persistence of aggression in human nature. It is recognised that the nature of aggression is an issue that is not resolved to everyone's satisfaction. Is it innate or learned? The most popular accounts are: it is an instinct [Lorenz 1963; and others], a drive [Dollard, Doob, Miller, Mouver and Sears 1939] or due to social learning [Bandura 1969, 1973]. Irrespective of which theory is true, kinds of aggressive action are strategic options even for agents untainted by biological imperatives or cultural habits. And this is all we have to accept along with a definition. I take aggression to be the threat or action of physical or psychological harm. Normally, such harm is unwelcomed by the recipient; however, there is the syndrome of masochism. The result of this action is violence, which includes bullying, fighting etc. I critically discuss inter-agent influence i.e. compulsion and persuasion further on in section 3.1. Here, using a compulsion-persuasion mix, I suggest three styles of inter-agent influence. They are:

(1) Aggressivism. An agent has a strategic preference to use compulsion (including coercion) over persuasion in dealing with disputes with others.

(2) Assertivism. An agent has a strategic preference to use persuasion; but uses compulsion (including coercion) in circumstances high up on a scale of escalation.

(3) Passivism. An agent has a strategic preference to use persuasion over compulsion (including coercion). Examples include passive resistance and psychological strategies such as persuasion in dealing with disputes with others.

Agents who take the approach of activism (aggressivism, assertivism) in contrast to passivism are sometimes characterised as "hawks" and "doves"

respectively. Broadly speaking, each approach involves a different compulsion-persuasion mix. What is important to realise is that such strategic preferences are not necessarily hard-and-fast. It is possible to use modifiers like strong/weak, extreme etc. to allow for grades in profiling agents based on these styles.

Which approach is the best way to go? There may not be a simple, universal answer to this question. The best position may be conditional, depending on the agent's interests and circumstances. Perhaps, what is required is a cost-benefit analysis of the options to distinguish the best from the worst approach. Though I don't undertake an in-depth study here, I do illustrate some reasons/s associated with each of them.

First, consider the extreme of passivism. The realists amongst passivists recognise that disagreements do occur. If disagreements can't be eliminated, then perhaps they can be minimised. For instance, in *Lacon*, Colton [1825] offers this advice:

> Two things, well considered, would prevent many quarrels: first, to have it well ascertained whether we are not disputing about terms, rather than things; and, secondly, to examine whether that on which we differ is worth contending about.

If this doesn't work, and dispute occurs anyway, then a passivist is inclined to retreat from the occasion.

Second, consider the other extreme of aggressivism. In *Life & The Student*, Cooley [1927] makes an interesting observation:

> To persuade is more trouble than
> to dominate, and the powerful
> seldom take this trouble if they can
> avoid it.

In the short-term, violence and aggression seem expedient; however, this may come at a price. Milton [Bk.1 I. L.648 1667], in *Paradise Lost*, notes:

> Who overcomes
> By force, hath overcome but half his foe.

The point being, the victor may have overcome their bodies but not necessarily their minds; hence, the victor may have enemies who might work against their interests. Still, there may be occasions where aggression is unavoidable, especially if there is no way to evade the plan or action of a known aggressor. Hence, in the use of force, Horace [c.20 BC] in *Carmina* offers this advice:

> Force, unaccompanied by prudence, sinks under its own weight. The gods give effect to force regulated by wisdom; they pursue with wrath bold, unhallowed schemes.

The suggestion being that there is a right use of force. This leads us to the next stance.

Third and last, consider assertivism. The current trend in dispute resolution is to promote a version of assertivism as the best way for the self or others to deal with disagreement. For Hatch [p.4 1996] “persuasion through reasoning” is preferable to aggression and the use of force. In demonstrating his point, he recounts the fable *of The Sun & the Wind* by the ancient Greek storyteller Aesop [c.6 BC]. This is how he remembers it:

> The sun and the [cold] wind were boasting about which one of them was stronger. They decided to have a contest. The wind noticed a man walking down the road wearing a coat. The wind said, "Whichever of us can get this man to remove his coat is the stronger." The wind blew and blew, but the harder he blew, the tighter the man pulled his coat around him. Finally, the wind gave up. Then the sun came out and shined down on the man. The man was grateful for the sun's warmth and removed his coat, laying it over his arm.

He then interprets this fable as follows:

> One moral for this fable is "persuasion is stronger than physical force." Zeno, another Greek, defined persuasion in a similar way. He called persuasion an open hand rather than a closed fist. Persuasion, then, is inviting, not constraining or threatening.

Thus, persuasion is a preferable way of bringing other agents around to the persuader's own side.

I don't intend to take up the force vs persuasion problem in-depth as it would detract from the main game; though what follows is an interesting approach. In *The Art of War* the Chinese General Sun Tzu [Ch.3, Axiom 2 490 BC] offered this advice: ".....to fight and conquer in all your battles is not supreme excellence; supreme excellence consists in breaking the enemy's resistance without fighting". Equally, Xenophon [c.430-c.350 BC] offers this advice:

> It is only for those to employ force who possess strength without judgement; but the well advised will have recourse to other means. Besides, he who pretends to carry his point by force hath need of many associates; but the man who can persuade knows that he is himself sufficient for the purpose; neither can such a one be supposed forward to shed blood; for, who is there would choose to destroy a fellow citizen rather than make a friend of him by mildness and persuasion?

The general character of this advice covers both the use of psychological and/or physical harm. Thus, in the first instance, it is prudent to use persuasion; and then, if unavoidable, use force as a last resort, especially to stave off overt aggression.

1.3 Debate and the Course of Action

Finally, I consider dispute development and the value-driven decision-making systems that determine the course of action. Disputes and debates develop through stages. Currently, there is no general agreement as to a state-transition map. Here, I attempt to describe the stages of dispute using a flow chart. It is through deliberation based on some standard of dispute resolution (SDR) that a decision is made as to which position is the more (or most) acceptable one in a debate. Indeed, the recognition of debate as a robust decision-making mechanism of mind or community is highlighted by Brockriede and Ehninger [1960a,b] in *Decision by Debate*. In section 3.3.2 the tradition of using a jurisprudential model for debates in discourse is critically discussed and

endorsed in this respect.

Diachrony and Synchrony of Disputes. It is important to recognise that disputes may not involve one place, time or group. After winning a dispute, you may "feel on top of the world"; indeed, you may feel that you "can take on the world". However, a victory may not necessarily be the end of the dispute as such. Sometimes a disagreement or conflict is not resolved in one engagement; and to feel confident merely based on one victory could lead to complacency. There is an old saying that warns against feeling too confident. It says: "You may have won the battle but you have yet to win the war". Implicit in this saying is what I call a battle-war metaphor, which is associated with the combat metaphor of critical discussion or debate. Disputes and debates may extend across generations and centuries. Agents in different generations take on positions. They represent them and in this way, as discussed previously, positions are much like roles in an organisation. This is appropriate to characterising disputes in discourse generally. A dispute itself may consist of one or more episodes of engagement; and therefore in their own right, they are disputes.

Stages of Disputes. Debates in discourse tend to be multi-agent, multi-stage systems involving inter-process communication. Simply, this involves informational activities and flows. Like organisms or communities they change and develop. Experience attests that they seem to have different states and transitions. People speak of a dispute stalling, taking a backward step or progress being made etc. Our language use, let alone experiences suggest dispute may have stages. Fundamentally, disputes depend upon language use and associated sign systems. If for just that reason alone it is important to consider disputes in the light of the synchrony-diachrony distinction of de Saussure [1971]. "Synchrony refers to a state fixed in [a period of] time, while diachrony refers to changing states of a language between different periods" [Bussmann, Trauth and Kazzri p.469 1996]. I take "state" to mean a stable condition that endures for some arbitrary time period. Both discourse and dispute can be considered the same way regardless of changes to language use occurring or otherwise. Hence, a dispute can have synchronic episodes

(stages) and undergoes diachronic changes (development).

If analysed carefully, what stages can be identified? Work on the stages of a dispute, specifically debate, has been done by others like van Eemeren and Grootendorst [1995]. In the context of their theoretical framework called pragma-dialectics, they distinguish and describe four stages in the conduct of a critical discussion or debate. They are:

(1) Confrontation. This involves “defining the difference of opinion”;
(2) Opening. This involves “establishing the starting-point of the discussion”;
(3) Argumentation. This involves “exchanging arguments and critical reactions in order to resolve the difference”; and
(4) Concluding. This involves “determining the result of the discussion”.

They recognise that at any stage obstacles may arise to hinder dispute resolution. This lead them to take an interest in “general principles of constructive argumentative discourse”. As such they propose “ten commandments” or basic rules for “reasonabl[y] resolving differences of opinion [van Eemeren and Grootendorst pp.208-209 1992]. Generally, I agree with their abstract framework that describes the stages of disputes. However, I have a few concerns. Their proposal is rather sketchy -- it has bare bones and needs to be fleshed out. Also, it lacks a basic strategic character, even though they recognise that obstacles can occur. In particular, disputes stall, sometimes don’t work out or are just plain unresolvable. However, I think these concerns can be addressed by recognising the problematic nature of debates. Previously, I argued in concordance with Meyer and others that debate is fundamentally a shared or joint problem-solving activity. After careful consideration, I propose what I think are the general developmental stages which takes shared problem-solving into account. With reference to the state-transition diagram of figure 1.3, I describe the stages (stable states) and transitions in the development of debates.

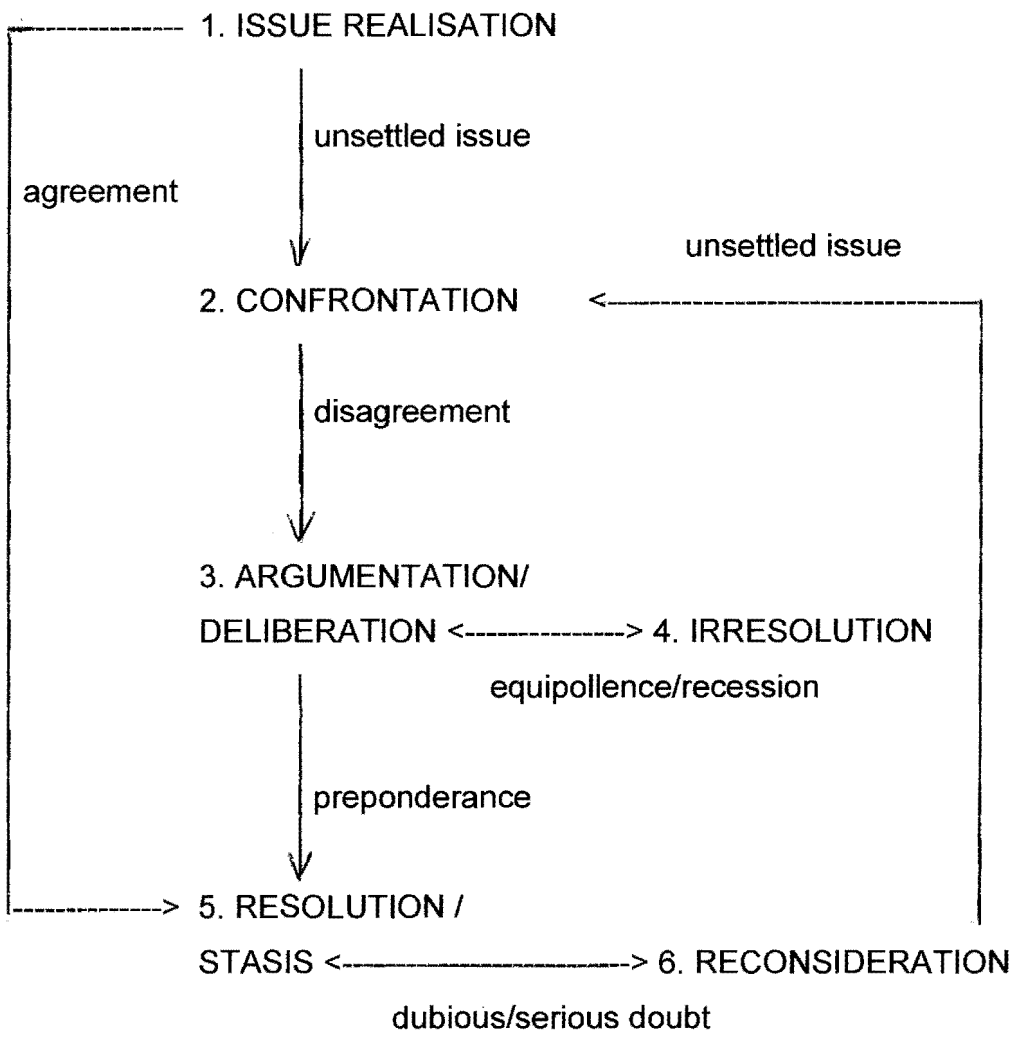

Figure 1.3 Stages of Critical Discussion or Debate. Disputes, of the debate kind, are initially triggered by an issue. If there is a consensus of opinion (general agreement) in mind or community, then the state of discourse shifts to the quiescent state of resolution or stasis; otherwise, it shifts into a sub-process that attempts to settle the issue and perhaps arrive at dispute resolution. Even then, doubt may arise leading to reconsideration and perhaps a revision of the outcome.

Firstly, Stage 1 is the realisation of an issue and its evaluation. An issue is raised in the discourse of mind or community. In his study of the role of arguments in conversation, Pinto [p.2 2001] highlights what initiates disputes. He states:

> ..... To make sense of the notion of arguing for [an opinion or] a conclusion, you've also got to have the notion of a point at issue between two persons – a point at issue being simply any proposition that is affirmed by one of them but not by the other. Arguing occurs in the context in which there are points at issue and addresses itself to one or more of those points. Typically, an arguer is attempting either to argue for a proposition which he affirms but someone else does not, or against a proposition which someone else affirms but he does not. .....

For Pinto this is the start of what he calls a "dialectical exchange". It can also be taken as the initial state or the post-initial state of a dispute. Does a dispute begin with an issue (shared problem) or a point at issue (disagreement)? On the one hand, a shared problem may be settled immediately; that is, it may simply be a misunderstanding, misinterpretation etc. Furthermore, there may be a clash of points-of-view and a realisation that the different views are responses to a shared problem. On the other hand, a disagreement highlights a decision problem: what position to side with? Thus, an initiating condition is either an unresolved issue leading to disagreement; or disagreement proper. Where is the line to be drawn? Critical discussion or debate naturally ensues to determine its acceptance as an issue. There are two ways to go from here. One way involves seeing the issue as already settled (in the past), as a pseudo-problem or as an unsettleable issue. Those who hold to the last two possibilities are inclined to be critics of those who pursue the issue. The other way involves the issue as alive and unsettled.

Stage 2 is confrontation. It arises from an unsettled issue. Amongst those who see the issue as alive and unsettled, there is activity that involves coming up with opinions or claims which might settle the issue. This involves taking a position i.e. stance, standpoint etc. on the issue. As previously noted, a position includes an opinion and a ground or case that strategically develops as the dispute unfolds in discourse over time. At this stage, there are two ways to go.

What tends to happen, is that an opinion is made and one or more counter-opinions arise to challenge it. This is the condition of disagreement between two or more positions on the issue. Simply, it is a difference of opinion.

Stage 3 is argumentation between two or more positions. It is a stage in which attempts are made to resolve differences of opinion by persuasion and organised opposition in discourse; that is, attempts are made through (rational) critical discussion or debate to settle the issue. Each position strategically develops a ground (or case) for its position in a contest of opposing positions on the issue. A ground is the sum total of acceptable supporting arguments, objections to opposing arguments, rebuttals and attacks on other positions etc. Concurrently, regulation and deliberation by conscience and/or authority tracks the development of the dispute. Based on an estimation of the aggregate (or net) strengths of the respective positions, attempts are made to determine if there is a state of equipollence or preponderance.

Stage 4 is the irresolution of the dispute. This may seem to be some kind of termination of a dispute. On the alleged termination of disputes in his sense, Pinto [p.3 2001] states:

> The decision to terminate a dialectical exchange or rational discussion can have considerable practical and/or theoretical import, for it leaves the discussants with the beliefs and commitments which they happen to have at the point at which discussion ceases.

This is only one way a dispute can cease. Perhaps it's necessary to distinguish (say) cessation and termination of a dispute where cessation covering all ways that it can come to an end. Given this, I reserve "termination" for a dialectical transition to a state of dispute resolution as defined by some implicit of explicit standard of dispute resolution (SDR), which is discussed below. Here, I focus on other ways disputes may cease. Sometimes a dispute arrives at a state of stalemate or recession that bring the dispute to a halt – without actually settling the issue. Firstly, consider the state of stalemate. What can bring this about? There are at least two conditions that come to mind. They are:

(1) Equipollence. Whatever criterion is used to evaluate positions, it is recognised that there is a pyrrhonic balance in the satisfaction of the criterion.

(2) Resistance. The issue (problem) is persistently resistant to settlement (solution). Either (1) or equivocating strengths occur.

I shall briefly comment on each within the compass of stalemate. Consider equipollence. Whatever critical basis is used to evaluate positions e.g. worth, strength etc., all positions satisfy the requirements equally. Hence, as it is not possible to choose amongst them, the issue is unsettled. Now consider resistance. In the 20th century the foundation of mathematics and theoretical computer science have had to confront the theoretical and practical limits of computability, if not intelligence and mind generally. A problem is either solvable or unsolvable; and if its solvable, it maybe tractable or intractable. A tractable problem is one which is solvable within our resource-bounds. Resources available to agents, groups or communities are typically time, effort, information (including intelligence), monies etc. An intractable but solvable problem means that it is not solvable within existing resource-bounds or any foreseeable future resource-bound. This might be due to cognitive closure [McGinn 1992] or the limits of intelligence or any intelligence. Hence, irresolution can be due to an issue being deemed insoluble or intractable. Secondly, consider the state of recession. The dispute cools, goes off the boil and there is a lull in activity. It is analogous to a time-out in sport. The issue is still unsettled. The disbanding of those involved in the dispute may be friendly or acrimonious. In a friendly disbanding, agents “agree to differ”. In an acrimonious one, there is much more discontent as in, for example, the *dialogue de sourds*. This translates as “dialogue of the deaf”. This is incidentally highlighted by Ward [pp.54-57 1963] in an article *The Pope of the Dialogue*, which appeared in the *Atlantic Monthly*. Therein it is stated:

> The dialogue between Christians became increasingly the *dialogue de sourds*, the exchanges of men deaf to each other, drowning the voice of conciliation in cries and countercries of “Antichrist” and in the clash of arms.

Just prior to this, the OED [p.601 IV 1989] defines this dialectical condition as “a discussion [or] meeting etc. in which neither side understands or makes allowance for the point of view of the other”. It is conceivable that such an alleged stage is part of the discussion stage; however, I think there are good reasons for distinguishing it. Some disputes or debates are short-term and run their course rather quickly. But there are others that flare up a number of times in a generation or across generations. Issues like the existence of God, the origin of the Universe, the nature vs nurture debate, the mind-body problem etc. are like this. Their discourses span centuries. During periods of irresolution there is time for reflection and creativity or there is a change of generations and some of the old players have died away, giving rise to new players in their wake.

Stage 5 is dispute resolution or stasis. Life goes on and actions have to be taken; and where they depend on the outcome a dispute, there is the need for finality and timeliness. In *The Fall*, Camus [1956] alludes to the need for finality in dispute. He states:

> Somebody has to have the last word. If not, every argument could be opposed by another and we’d never be done with it.

Dialogically speaking, some agent is going to have “the last word”. That final expression is either a prelude to a stalemate or recession on the one hand or a resolution to the dispute on the other hand. Stalemate and recession was previously discussed under stage 4 above. It was necessary to distinguish (say) cessation and termination of a dispute, cessation covering all ways that it can come to an end. Given this, I previously reserved “termination” for a dialectical transition to a state of dispute resolution however it is defined by some implicit or explicit standard of dispute resolution (SDR). At the very least, SDR requires the settling of the issue. One way this may be arrived at is through issue realisation with settlement (Stage 1); that is, “no contest”. There may be just one opinion that settles the issue and most agents concur with this. In those circumstances, there is a move to general agreement on the issue. Another way

is through the struggle of opposing, competing positions in dispute (Stage 3). What then is the condition for dispute resolution? Given that the focus of a dispute is the issue and a difference of opinion as to what position best settles the issue, then it appears that a dispute is resolved when the issue is settled. It may be thought that an issue (problem) is settled when there is agreement as to which opinion or claim (solution) is the right one. But there is a proviso to this. What settles an issue is dispute resolution is specified by the rules of engagement; that is, the code of conduct for disputes within a given mind or community. This includes a SDR. It is incumbent on all those who are involved to seek the best standards for dispute resolution; however, this is not always what happens. For instance, if a community is concerned with inquiry (the seeking of truth) and all share such a view, then the code of conduct is designed to expose the truth through critical discussion or debate. Usually, there are differences of opinion as to the running and terminating of disputes. Those who agree with the outcome, assent to it; and those who disagree with the outcome, dissent from it. Here, we have to recognise that there is an on-going inter-play of object- and meta-perspectives on disputes. At the very least the SDR involves convincing and conviction. If an agent, group or community is committed to the SDR, then the test for dispute resolution is being generally convinced with regard to one of the opinions (or claims) in dispute. However, if an agent, group or community is not (entirely) committed to the SDR, but has to abide by it, then it or they have to feign being convinced and forming a conviction as-if it or they were truly committed to the SDR. Whatever is the case, it is general agreement, in some sense, that counts. When I previously used the expression “general agreement”, I did so cautiously. There are at least two familiar positions regarding dispute resolution:

(1) Consensus. A dispute is resolved when there is majority agreement in favour of one position on an issue rather than another.

(2) Dominance. A dispute is resolved when it is apparent that one position is superior to another according to some (agreed) criterion.

Both are notions of non-equipollence in some general sense, recognising that one position is better than another. And, each rests on some agreed code of conduct. These different approaches have often been compared as “soft” (subjective) and “hard” (objective) ways of resolving disputes. I argue in favour of dominance, primarily because a high standard of compliance has to be met before one and only one position is deemed to be better than another in a contest of strength. The dominant position is determined by deliberation. Though he doesn’t refer to deliberation as such, Hume [Bk.1 Pt.III Sect.XII p.138 1739 (1888)] characterises the act of decision-making. He states:

> As to the manner of their opposition, ‘tis evident, that as.....contrary views are incompatible with each other, and ‘tis impossible the object [of reference] can at once exist conformable to both of them, their influence becomes mutually destructive, and the mind is determin’d to the superior only with that force, which remains after subtracting the inferior.

Upon deliberation – which involves the acts of comparison and decision -- it is at least indicated that either no position is superior to the others or that one position is superior to the others. Where SDR is based on a jurisprudential metaphor, deliberation leads to equipollence or preponderance. Through the preponderance of the aggregated (or net) strengths of opposing positions, it is determined that one position is the dominant one. The opinion of this position is said to have been established (or proven in some contexts); and an agent or group is said to be convinced of the opinion or claim, under this standard, and therefore has formed a conviction. On this basis alone, it is possible to determine that there is a dialectically and rationally better or more worthy position; that is, a victorious, winning or dominant position. This general agreement is treated as agreement for all time. Not only do we know that agreement has been reached and the issue settled but it has been settled for all possible contingencies. That is, no matter what event comes our way and causes us to shift our confidence, they are always insufficient to warrant us, under any regimen of appeals and/or arguments, to shift from this state to one of crisis. Normally, we would be inclined to think that this is the final (or terminal) state -- the end of the story. But this might not be so due to the fallibility of agents.

Finally, Stage 6 is reconsideration brought on by a crisis of confidence. Doubts are raised about the previous deliberation. Sometimes these doubts are serious while others are not. We come to this stage by one of two ways. One way is after dispute resolution. Agreement has been reached, perhaps long ago, and all seems right with the world. Circumstances might well have remained this way for a long period of time. For instance, new evidence is brought to light or evidence is found to have been fabricated in a court of law. The evidence-based arguments on a person's guilt are brought into doubt; and there are moves to have the case re-opened. In other words, an issue thought to be dead-and-buried is brought back to life. Another example is the worldview based on Newtonian physics. It was settled that the Newtonian worldview was the true picture of reality. We had read the mind of God and knew the workings of the world. Then, a growing base of evidence brought the worldview into doubt. This reconsideration culminated in Einsteinian physics. The crisis may turn out to be a "false alarm" if the triggers are judged to not warrant a shift from the state of resolution. However, if the triggers are judged to be warranted then there is a crisis. Another way is after dispute irresolution. It was accepted that the issue could not be settled either because of the agents involved and their circumstances; or technically, the prevailing view was that the issue is an unsolvable problem. In both possibilities, something may happen in the world and/or the minds of agents which, once made public, invokes a crisis of confidence which leads to sufficient doubt. This takes us back to the realisation of the issue in a different light. An issue once laid to rest is now brought back to life.

CHAPTER 2: PERSUASION

Instead of working on your opponent's intellect by argument, work on his will by motive; and he, and also his audience if they have similar interests, will at once be won over to your opinion, even though you got it out of a lunatic asylum.

Arthur Schopenhauer
The Art of Controversy
1850

There is a holy, mistaken zeal in Politics, as well as Religion. By persuading others we convince ourselves.

Junius
Letter, 19 Dec. 1769

The focus of my philosophical inquiry now turns to persuasion in discourse and debate (rhetoric). My aim is to develop a theory of persuasion as it relates to critical discussion or debate in discourse. Traditionally, such a theory is called rhetoric [Gk. rhetorikè, a concern with using language, especially to influence or persuade others; Barnhart p.925 1988]. This is a view which goes back to Aristotle, Quintillian, Cicero and others. Though I don't give a definitive account of rhetoric at this time, I endeavor to judiciously cover what I think is appropriate for my philosophical inquiry.

First, I consider the nature of influence and persuasion in discourse. Persuasion is psycho-social influence by way of language (and other sign) use in discourse. It operates through the HH infrastructure of the cognitive architectures of minds. An agent not only persuades others but also the self.

Second, I consider the relation between agents, opinions (or claims) and the appeals they used in persuasion. I suggest that persuasion involves the use of appeals and appellation through (sign or) language use. It is directed at the attitudes an agent has toward an opinion (or claim). I posit a commuting

agent-opinion-appeal triangle which shows their inter-relationships.

Third, I consider confidence-opinion-persuasion dependency. With an emphasis on claims and beliefs. I posit that minds - the engines of persuasion - operate according to a opinion-persuasion relation with thresholds (OPR-T) which regulates persuasive activity in discourse. The measures and scales used are net certainty (or probability) and net (persuasive) support strength. The threshold can be viewed as a benchmark of establishment (BOE). Such relations are best characterized by the class of sigmoid functions. Parameterised functions can deal with belief change and different styles of persuasion. As a consequence, it offers an alternative to Baysianism. However, such a proposal is tied up with issues relating to different probability conceptions, which is addressed later on.

Fourth and last, I consider the relation of belief to action in the world at large. Whatever their competence, agents develop a standard of establishment (SOE) for the grounds that support beliefs. Ideally, agents are regulated by a belief-action principle. That is, agents prefer not to act on opinions -- in particular beliefs - unless they are established (or even proven) on the basis of some ground (or case).

2.1 Influence

What is influence? It's not much of a conceptual leap to see an analogy between the interaction of physical objects and systems; and the inter-play between agents especially in debates. In psychology, the theories of mind developed by Köhler and Lewin are based on such insights. In keeping with naturalism, there must be something to this. After all, agents are at least physical systems. But even those who don't hold to naturalism have used, as Descartes did, such analogies anyway. What becomes apparent is a tradition of physical analogies. This is particularly noticeable in argumentation and debate where terms like "force", "strength", "weight" etc. are used. Well known examples are: "the force of logic", "support strength", "the weight of evidence", "on the balance of probabilities", "powerful speaker" and so on. All stem from "influence" which is defined by the OED [pp.

939-940 V 1989] as follows:

> ..... The exertion of action of which the operation is unseen or insensible (or perceptible only in its effects), by one person or thing upon another. ..... To exert influence upon, to affect by influence. To affect the mind or action of; to move or induce by influences. .....

Historically, the term has been associated with flux and flows in water and, later, immaterial substances including those emanating from the stars and affecting our lives. Today, we are inclined to speak in terms of continuous media and force-fields. There is also no mention of physical contact. However, this is implied by the possibility of origins of influence touching when distance decreases to zero. It is in this full sense that "influence" is used here. Having clarified the notion of influence, I intend to focus on influences between agents or what is classically known as "the effect on the person" [Corbert 1965] or, more precisely, inter-agent influences, especially those involving persuasion.

2.1.1 Influence Types

Technically, in the social setting our concern is with psycho-social influence. Here, "influence" is sometimes associated with "control" and "regulation". But is such influence really about control? Fundamentally, I think it is. This stance can be appreciated by what is ultimate in this regard. A marionette is a puppet which the puppeteer influences -- one would say controls -- by pulling the strings attached to its limbs. We might envisage a futuristic marionette (designed according to the principles of AI and Robotics) whereby the "strings" can control anything -- even its artificial thoughts, feelings and actions. Ideally, in our most diabolical moments the self might want to be the puppeteer and others to be the puppets. Clearly, this is not realistic, if not desirable for those with a conscience of fairness and reasonableness; though one can envisage a future totalitarian society which has neuro-cybernetic devices inserted into and wired up to the nervous system of its citizens. But, stripped of niceties, this is what we'd like to be able to achieve. Normally, there is no gilt-edged guarantee of success where influence and persuasion is concerned. We don't have this kind of godly control over others

except the self, though even our own self-governance may fail us at times.

Agents are subject to many influences during their lifetime. It's hard to imagine how it is possible to go through life without being influenced in some way as to what to think, feel or do. Indeed, an essential feature of life is to influence and be influenced by the self, others and the environment. With regard to agency, what agent-based influences are there?

When examined closely, it appears that the class of agent-based influences an agent might be subjected to, are those that are internal and external to the agent. Where internal ones are concerned, we can look to the psychology of our own experiences; and the hormic-hedonic (HH) infrastructure of mind discussed further on in section 2.2. What "moves" agents are their interests, both innate and learned. The law has long recognized this in its means-motive-opportunity model of agency. The motives include drives, needs, desires and interests. There are motives due to Human Nature that arise from the evolution of species; and those due to cultural habits and our own interests. It's not always clear-cut as to which are innate or learned. There appears to be cooperative and competitive arrangements between our biological imperatives and interests. Clearly, they have an influence on our thoughts, feelings and actions. The other are the external influences. An agent (or group) can influence others to think, feel and act. I suspect they are only those stimuli that have influence because they are perceived or interpreted as impacting on our interests in some way. Apparently, without these internal motivating drives, influencing through communication is not possible.

Of those external influences I identify compulsion and persuasion. Both involve verbal or non-verbal forms of communication. Relative to compulsion, persuasion involves psycho-social influence on the agent from outside; and I critically discuss this later. For now, I focus on compulsions. A compulsion is concerned with the use of psycho-physical action or "force" on agents. For me to compel you I have to interact with you in some way. In doing so, something is at least being communicated either verbally or non-verbally. If I shove you (interaction), then I am also sending you a message (communication). It might well be that I'm threatening

you or retaliating in response to your prior action. Clearly then, even though compulsion involves violence -- physical harm or the threat of harm -- it can have a psychological impact.

One extreme form of direct compulsion is elimination. Because agents live in a community and there are individual differences (arising from the evolution of agent populations) their agendas are sometimes in competition with or require the co-operation of other agents. The engines of actions are the cognitive architectures of mind which includes intentions (interests), beliefs, values, strategies etc. Hence, if you can't or don't succeed at persuasion and negotiations are not possible or desirable, then one way is to physically compel opponents into non-existence; in other words, to eliminate them. In this way you remove the obstacle of resistance and future impacts on your interests. There is the proviso that there is no possibility of retaliation or retribution.

Compulsion and coercion (also called "duress") is critically discussed in depth by Wertheimer [1987] in *Coercion*, one of the few books on the topic [p.145 Feinberg 2000]. Compulsion can be direct or indirect in nature. Direct compulsion (also called "force") is physical action undertaken to make an agent act in a certain way. Clearly, any physical action on an agent is going to have some psychological consequences. At the very least, in direct compulsion there is no choice. An indirect compulsion or coercion involves having a choice. The choices are generally unpleasant or undesirable; and there is typically a threat to do harm. In law, there is a consideration of whether or not the coercion is resistible especially if it's harmful to others or the state. Coercion is exemplified by Butler [Pt.III Canto iii, l 547 1663-78] in his mock-heroic satirical poem, *Hudibras*. Therein it is stated:

> He that complies against his will,
> Is of his own opinion still,
> Which he may adhere to, yet disown,
> For reasons to himself best known.

Stevenson [p.1426 1934, ed. 1967] points out that this is often misquoted as "A man convinced against his will.....". Indeed, taken literally, it's hard to appreciate

that an agent can ever be convinced unless it is by his or her own volition whatever the situation might be. The point is that under duress, an agent may espouse that they are persuaded or even convinced of an opinion, claim, cause etc. where in the privacy of their own mind they are not. Furthermore, Winkler and Krippner [p.482 v.3 1994] makes this cautionary observation with respect to coercion: ".....Instances of coercion can be misconstrued as acts of persuasion since there is a fine boundary between forced change and persuasive change". Sometimes what passes for persuasion is, on close analysis, coercion. The reason for this may be due to the fact that compulsion and coercion, as previously indicated, can involve language use as part of inter-agent influence.

I now turn to persuasion. Unlike compulsion, persuasion is psycho-social influence which purely relies on having a psychological impact. Subtract the violence in compulsion and what remains is communication as the only interaction by which inter-agent influence can occur. But why choose to act persuasively? A preference for persuasion over compulsion is probably based on an existential cost/benefit analysis relating to the quality of life e.g. psycho-social impact, damage to assets, resource consumption etc. As to the nature of persuasion, I critically examine this in what follows.

2.1.2 Conversation and Persuasion

A significant turning-point for rhetoric was World War II (1939-1945). Persuasion -- in the forms of propaganda, brainwashing and indoctrination -- gave rise to international concerns. Indeed, wartime studies were the impetus for empirical studies in persuasion in later years. Of particular note is the work of Hovland and others [1953, 1957] of the Yale Institute of Human Relations. Since then the focus has been on topics, situation, media, audience, predispositions etc. The Yale Model proposed by Hovland, Janis and Kelley [p.12 1953] is an attempt to understand persuasive communication. The motto of the team was "the formula of *who* says *what* to *whom* with *what effect*". In *Arguing & Thinking*, Billig [p.93 1987] points out that the formula originates in *Propaganda, Communication & Public Opinion* by Smith, Lasswell and Casey [1947]; which "can be seen as a

modern, and theoretically soulless, version of [a] formula for a science of rhetoric" expressed by Plato [c.427-347 BC] in *Phaedrus*. Indeed, as Corbertt [1969] points out, the notion of an "effect upon the person" was prominent in the classical understanding of public speech and debate. Returning to the Yale Model and Hovland's team, it was developed as a conceptual framework in which to formulate hypotheses about the nature and workings of persuasion. Indeed, their model is the conceptual background for the work of Toulmin [1958] and Perelman/Obrecht-Tychea [1958] on reason, argumentation and disputation in discourse. What it does suggest is that persuasion is some means to an end. The main contribution of the Yale model is the emphasis on having a communications-theoretic framework in which to describe inter-agent influences and persuasive communication and base this on research findings. However, what seems to be equally, if not more, insightful is a generalization of Austin's [1962] speech act theory, which I take up later.

Communication is at the heart of persuasion. Indeed, there is a fundamental communicative prerequisite for effective persuasion. Campbell [p.213 1841] describes it as follows:

> .....whatever be the ultimate intention of the orator, to inform, to convince, to please, to move, or to persuade, still he must speak so as to be understood or he speaks to no purpose.

It is crucial to communicate well so as to be at least understood, otherwise the persuader has less of a chance of being successful. What this rhetorical prerequisite indicates is that there is more to persuasion than passing messages to-and-fro. So, what is the nature of persuasive communication or persuasion? The OED [pp.610-612 XI 1989] offers this account of "persuasion":

> The action, or act, [that involves].....the presenting of inducements or winning arguments; [that is,] the addressing of reasonings, appeals, or entreaties to a person in order to induce him [or her] to do or believe something. ..... Something tending or intended to induce belief or action; an argument or induction.

I think this account of persuasion in discourse captures its essence. What

persuaders want is to influence what is going on inside the persuadants. Why? Because what is going on inside the persuadant eventually leads to thought, feeling or action, including communication. The OED characterizes persuasion in terms of inducements, appeals, entreaties etc. Translations of Aristotle's [c.384-322 BC] works focus on appeals which is highlighted by the OED; and, keeping to this Aristotelian tradition, that's what I emphasize also. What can be inferred from the aforesaid definition is that, simply stated, an appeal is an inducement for which there is no guarantee of success. As such, action taken in "a spirit of persuasion.....[is] an attempt to influence opinion" even if the attempt runs "directly counter to the overwhelming weight of contemporary sentiment and opinion....." [Keynes Pref. p.v 1931]. Thus, it is evident that, compared with compulsion, persuasion is purely sign-based psycho-social influence where there is no violence, though there may be non-violent physical contact or no contact at all.

There are some other concerns about persuasion, which have a bearing on the nature of persuasion. One has to do with the channel of persuasion i.e. linguistic or otherwise; while the other has to do with the scope of persuasion in discourse. I shall address them in turn.

First, is persuasion confined to language use? The types of persuasive actions an agent takes are linguistic and, as I propose, non-linguistic in nature. People can be moved by words alone. Indeed, it has been touted by some advocates of Reason that "the word is mightier than the sword". Life is not as simple as that, but what is clear: words have an "effect on the person" [Corbert 1965]. Words can hurt. However, people can be moved by actions without words. I might seduce someone I emotionally and sexually desire. I gently kiss, touch and caress them. Again, something is being communicated. Seduction like this is a kind of non-verbal persuasion to accept an unspoken invitation. Given this and similar examples, it would appear that persuasion -- that is, appealing to, inducing etc. -- may occur through the use of signs other than linguistic ones e.g. diagrams, gestures, body movements, etc. It appears that more often than not, non-linguistic signs in some system are translatable into linguistic ones.

Furthermore, there is some equivocation, if not confusion, as to the scope of persuasion. Is it confined to public speech or has it got a wider scope? I suggest that the best approach is to take the view that it's all about "persuasive communication" which happens to be the focus of the Yale model. A definition that is sympathetic to this stance is given by Ijsseling [p.1 1976] in his account of rhetoric. He states:

> The ancients defined rhetoric as the art of speaking and writing both well and convincingly:
>
> *ars bene dicendi and ars persuadendi.*
>
> It included the practical skill of delivering a good and convincing speech as well as the theoretical science formulating the rules and conditions for a beautiful and sound exposition.

Apparently, this account invokes a holistic theory-practice distinction. Theory informs practice; and practice tests theory. Furthermore, it is sufficiently wide to allow for speaking in discussion and debate (dialogue) along with public speeches. Indeed, the compass of rhetoric can be extended even further, as discussed by Ijsseling [p.2 1976], to cover

> .....the theory of persuasive communication by means of [or through] the mass media (press, radio, television, cinema). Full attention is especially given to advertising techniques, political and ideological propaganda and opinion forming. The theory of persuasive communication is also called rhetoric and can have a descriptive, normative or critical character.

This approach appears to be born out by the recognition of dialogue as a rhetorical figure; and the tradition of dialogism in rhetoric. According to the OED [p.601 IV 1989] this involves a "balancing of accounts, reasoning, conversation [and] debate". It goes on to declare that it is "the discussion of a subject under the form of a dialogue, to the personages of which the author imputes ideas and sentiments". From this account, it is possible to infer that a difference of opinion can be worked out through persuasion in dialogue. Essentially, it ties persuasion to dialogue, including critical discussion or debate in discourse; that is, persuasion is not just tied to public speeches.

I contend that the distinction between public speeches and discussion-and-debate should not distract us from the view that rhetoric is about persuasive communication. Incidentally, Worthington [Pref. p.viii 1994] indicates a way of sorting things out:

> Though distinct genres, Greek rhetoric and Greek oratory are intimately connected with each other: rhetoric is the intellectual art or study of persuasion; oratory is the intent to persuade, the application of the art of rhetoric. One cannot live without the other, so to speak.....

Though I prefer Ijsseling's outlook on persuasion over that of Worthington, there is something useful to glean from this conception: the notion of genre. If we apply this to Ijsseling's outlook, then there are different genres of persuasion in discourse. Though not making a direct reference to genres, they are tacitly recognized by others. It is worth noting that the genres of persuasion, apart from sharing persuasion, are not as distinct as they might seem. In my view, the distinction depends on a temporal perspective. Experience attests that persuasion can occur through dialogue. A dialogue being an arbitrary piece of conversational exchange can be part of a critical discussion or debate as a whole. A public speech is conducted with the expectation that persuadants (opponents and audience) typically remain silent and don't necessarily "have their say". Depending on the issue and situation, silence does not always happen and some dialogues may occur between the speaker and members of the audience. This merely highlights the point of my argument. The public speech may touch on one or more issues. In doing so, it may contribute to one or more discourses on topics and associated issue/s in a community. When the public speech has passed and there is silence, then that may be the end of the matter. This is an extreme situation where the dialogue has been interrupted or peters out into silence. Still, facsimiles may be distributed through media; people may recall the speech and so on. When others start to treat it as a contribution to one or more discourses, then it becomes a component of the discourse. This places the speech in what might be called an extended dialogue wherein the speaker engages others. Clearly then, the restriction to only public speeches usually doesn't take into account that public speeches tend to be tied to the discourse of a community.

2.2 Agents, Opinions and Appeals

For much of its historical development, psychology has been a discipline within philosophy. It has changed from early psychosophy to ye olde mental science and then to the scientific psychology of today. An early psychosophical attempt to understand persuasion and how it works is due to Aristotle [384-322 BC], especially in the *Art of Rhetoric*. Another comprehensive attempt occurs with Campbell [1841], a Scottish theologian, in *The Philosophy of Rhetoric*. Since then there have been modern attempts but I contend that within the framework of persuasion and communication, such as the Yale model popularized by Toulmin [1958] and Perelman [1958], critical developments of Aristotelian insights still offer much promise. Thus, I critically examine the Aristotelian notion of appeals and attempt to develop it further. This Aristotelian tradition leads to what I call the agent-opinion-appeal triangle shown in figure 2.1. Simply stated at this stage, the diagram highlights that the ground of appeals strategically developed [Zarefsky 1996] by an agent in contest with other positions has a persuasive impact on the relative uncertainty of an opinion and the consequent confidence the agent has in that opinion.

Examples include apostrophe, invocation, rhetorical question, metaphor, simile, personification, argument, paradox etc. Where persuasion is concerned, they are referred to as rhetorical figures or even rhetorical devices. I shall use "rhetorical figure" to cover both verbal and non-verbal expressions. This is consistent with the same distinction previously made for communication and its sub-types. Metaphorically, rhetorical figures are the instruments of persuasion. Conrad [1912], the Polish-born English novelist, highlights kinds of figures when he says: “He who wants to persuade should put his trust not in the right argument, but in the right word. The power of sound has always been greater than the power of sense”. Clearly, rhetorical figures are not confined to argument forms. Appealing looks, a threatening manner, etc. are examples of non-verbal figures of expression.

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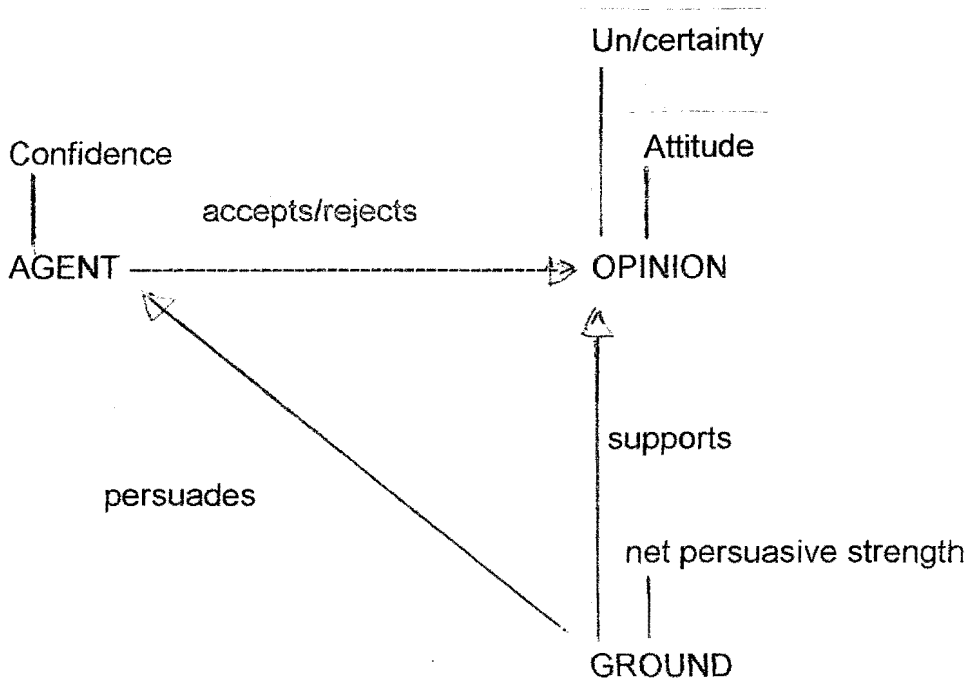


Figure 2.1 Agent-Opinion-Appeal Triangle. An agent is persuaded, even convinced to accept/reject an opinion by a strategically-developed ground in the discourse of dispute. An agent's confidence and the net attitudinal uncertainty of the opinion depends on the net persuasive support strength (or weight).

An apt example of persuasion that involves the use of rhetorical figures can be found in Shakespeare's *Julius Caesar*. The play contains a number of rhetorical speeches. Firstly, there are speeches between the conspirators as they persuade each other to act against Caesar, and then in public there is the speech where Brutus defends their action to the populace of Rome. Brutus declares:

> As Caesar loved me, I weep for him;
> as he was fortunate, I rejoice at it;
> as he was valiant, I honour him;
> but, as he was ambitious, I slew him.

When Mark Antony speaks, he sways the crowd, convinced by Brutus that Caesar was a tyrant and rightly slain. He then swings to the opposite opinion:

> The noble Brutus
> Hath told you Caesar was ambitious:
> If it were so, it was a grievous fault;
> and grievously hath Caesar answer'd it.....
> I thrice presented him with a kingly crown,
> Which he did thrice refuse: was this ambition?
> Yet Brutus says he was ambitious;
> And, sure, he is an honourable man.

A critical analysis identifies a number of rhetorical figures such as selective use of facts, emotive language, sarcasm and rhetorical questions. Even silence can be a rhetorical figure. In *Wit's Trenchmour*, Breton [15/1 Wks. (Grosart) II 1597] states: "Silence can best talke with wooden Rhetoricke". Saying nothing in the right context and situation can be just as persuasive as saying something. Silence may be thought of as the null rhetorical figure.

2.2.1 Appeals and Grounds

Now I turn to appeals. Generally, appeals involve the use of rhetorical figures. To understand the relation between rhetorical figures and appeals it is useful to apply the speech act theory of Austin [1946] to the task. There is one proviso: where he uses speech act I prefer a more general account based on communicative acts as I wish to include both verbal and non-verbal forms in the fold. Thus, a (verbal)

communicative act has three aspects: what is communicated, (locution), the intent behind it (illocution) and the effect it has (perlocution). Thus, an appeal is a communicative act where what is communicated is some rhetorical figure with the intent to persuade some persuadant and having an effect on the persuadant that is commensurate with the persuasive strength of the appeal used.

What does making an appeal really entail? The classical understanding recognizes a variety of appeals, which can be used in persuasion. My inclination is to recall the notion of appeal developed and used by Aristotle [384-322 BC]. Rhetoricians like Weaver [pp.208, 220 1953], Zarefsky [1989; 1996] and others do likewise. For instance, Weaver suggests that "rhetoric provides" a "set of appeals"; and that persuasion can only be "an attempt through language to make one's point of view prevail.....". Similarly, inspired by Aristotelian insights, I wish to contribute to a theory of appeals. The word "appeal" and its derivative have sufficient generality in their meaning to cover what's going on "behind the scenes" when rhetorical figures are used to persuade in dialogue and discourse. The OED [pp.397-398 I 1933] states that to appeal is "to call upon a recognized authority to vindicate one's right or decide in one's favor in a dispute". Where critical discussion or debate are concerned, the so-called "authority" can manifest itself in different ways. Some agreed or imposed mediator or referee much like a judge or magistrate may adjudicate a debate. Where there is no authority figure as such, then each participant in a debate is a "judge and jury" according to their own conscience. Aren't we all evaluating the performance of others and perhaps raising objections at times to what they do or the manner in which it was done? Clearly, where there is agreement on the conduct of debates then there is a common ground by which to appreciate things. As each of us is an "authority" on the topic and the conduct of debates, then each agent at the very least can only appeal to the self and others. Furthermore, the OED [pp.397-398 I 1933] states that an "appellation" is "the action or process of appealing or calling on entreaty, or earnest address. .....". The one who makes the appeal is the appellant. It is clear from these accounts that the term is traditionally associated with the operation of English law. Also, "appeal" is used in fallacy theory, due to Aristotle, to name some fallacies. Examples are: the appeal to authority, appeal to emotion etc. It seems to be that

in all usage an underlying assumption is that there is *no guarantee* that the agent at which the appeal is addressed will respond or even be persuaded by what is expressed in words. In a perverse way, the machinery of opinion and appeals is illustrated by Crowley [Ch.56 1929], a British occultist of the Roaring 20's. In *Confessions*, Crowley says:

> Roughly speaking, any man with energy and enthusiasm ought to be able to bring at least a dozen others round to his opinion in the course of a year no matter how absurd that opinion might be. We see every day in Politics, in business, in social life, large masses of people brought to embrace the most revolutionary ideas, sometimes within a few days. It is all a question of getting hold of them in the right way and working on their weak points.

When you set the appeals right, persuadants are like marionettes. They will "dance to your tune" if you "pull their strings" in the right way under the right circumstances. For better or worse, this is the power of persuasion. All moves in persuasion are underwritten by some inherent appeal that originates in the agent making the appeal. The process of appellation in the persuader sends forth an appeal, which is expressed as some rhetorical figure in dialogue. Some evaluative or judgmental process of the persuadee receives an appeal, via the rhetorical figure in dialogue, and by its "authority" causes the agent to give in or resist its advances.

Appeal Types. In the *Art of Rhetoric*, Aristotle [384-322 BC] attempts to identify the fundamental types of appeals used by agents in public speeches, critical discussions and debate. Such appeals rely on rhetorical functions of the mind-brain. They include:

(1) Reason (Logos). Persuasion involves an appeal directed at an agents interests in Reason e.g. rationality, logical order etc.

(2) Passion (Pathos). Persuasion involves an appeal directed at an agent's interest in the passions e.g. emotions, needs, desires.

(3) Character (Ethos). Persuasion involves an appeal directed at an agents interests in character and human affairs e.g. credibility, trustworthiness, truthfulness, reliable observer etc.

Within bounds, such rhetorical functions have a kind of wisdom. They are accessible through appeals. Implicit in his account, an agent attempts to target commitments by appeals expressed through the rhetorical figures. To this list of fundamental appeals, I suggest adding the following:

(4) Sensorium. Persuasion involves an appeal directed at an agent's interest in sensation and perception as central sources of information and knowledge.
(5) Agenda (Telos). Persuasion involves an appeal directed at an agent's personal interests e.g. money, fame, power etc.
(6) Authority. Persuasion involves an appeal directed at an agent's interest in conforming to or complying with some authority figure.

I summarize the various classes of appeals in figure 2.2. I shall critically discuss each of them in turn according to why they work because they offer insight into what are the hidden commitments to what is rhetorically permissible to an agent.

First, there are the appeals of Reason. This works because Human nature has evolved such that there is a capability for rational thought and reflection; in short, reason. I critically discuss and develop an understanding of reason in the next chapter. Critical thinking and reasoning can be compelling if not convincing. People typically refer to "the force of logic" in this regard. Second, there are the appeals of passion. This works because it's an autonomic feature of Human nature. It has its own "wisdom". For instance, the passions sometimes serve us well. The mechanism of fear can successfully alert us to dangers in our environment. Though it can be subject to the governance of Reason in action, it nonetheless responds to what is perceived or thought in its own way and at the same time. If an agent is inclined to bow to its motivating influence in all occasions then it can be persuaded this way. Third, there are the appeals of character. On this, Butler [1951] states: "we are not won by arguments that we can analyze but by tone and temper, by the manner which is the man himself".

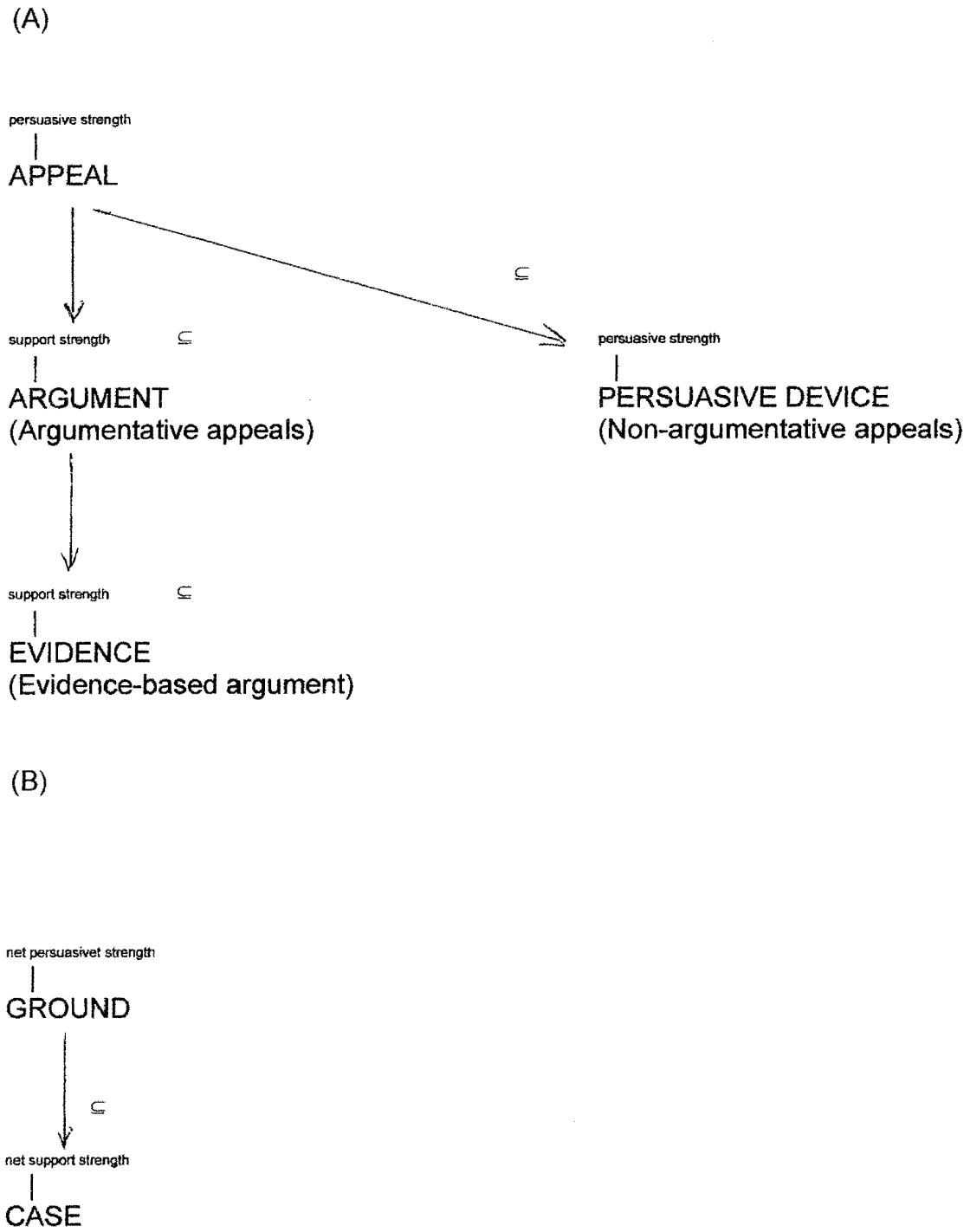


Figure 2.2 Appeal Types. (A) The successive appeal types are appeals, arguments (reason-based appeals) and evidence (or more accurately evidence-based arguments). (B) Strategically accumulated appeals and arguments for a claim is called a ground or case.

If the character of this person is such that they are known to value truth and truthfulness and they have a good track record, then they can be considered to be credible, even where knowledge is concerned. Fourth, there are the appeals of the sensorium. Apparently, this works because we are all naturally disposed to believe what we perceive or what is reported to us as being previously perceived by others. Furthermore, perhaps deliberation has given us assurances. When the sensorium operates in tandem with Reason, then we have the basis for evidence and evidence-base arguments. Appeals of this kind are central to science, law, medicine and other disciplines. Fifth and last, there are the appeals of personal interests. Bonaparte (1769-1821) is reported in Emerson's [1850] *The Man of the World* as saying "there are two levers for moving men -- interest and fear". Fear has already been addressed under passions. Experience attests that people can be persuaded to act where their interests will benefit. This is not problematic for inquiry which is an interest also; however, difficulties arise where other interests distort "the seeking of truth". Noteworthy is fraud in science. Overall, we can all identify the potential for wisdom, within bounds, in each of them. Other times it's a delusion (it gets it wrong) or we are not alerted at all. We either dismiss them outright or adaptively tune them to work for us. And I think bounds and limits is the main point at issue. We either dismiss most, if not all, of them or consider dialectical conditions they have to meet for them to be acceptable appeals. Sixth and last, another appeal type is authority. A sub-type of this would be expert opinion. In fact, the law recognizes expert opinion as a source of evidence. As there are good and bad experts, there is also a requirement of assurance which is only possible through the enforcement of conditions like qualifications, a good track-record of performance, a good reputation, etc.

Appeal types draw our attention to the possibility of natural dispositions of the mind and a common ground of appellation. Here, I refer to the primal and habitual bases of appeals. The primal basis -- roughly Aristotle's pathos and Freud's id -- underscores our thoughts, feeling and actions. In *The Passionate State of Mind*, Hoffer [Aph.218 1955] suggests that "the real persuaders are our appetites, our fears and above all our vanity. The skillful propagandist stirs and coaches these internal persuaders". It's hard to deny their presence; however, Reason does not

always "listen" to them. Still, they can be so compelling that we are persuaded to conform to the thoughts of others. What then is the innate primal basis? Where persuasion is concerned, we may obtain some insight from the work of Cialdini [2001a; pp.62-76 2001b] on social influence. This is reported in the book *Influence* and summarized in the article *The Science of Persuasion*. Cialdini's studies, conducted over 30 years and with a focus on behavior change with regard to compliance with a request, identifies "six basic tendencies of human behavior [which] come into play in generating a positive response". They are:

(1) Reciprocation. An agent tends to repay in kind what they received from another agent e.g. gifts, favors, concessions etc.
(2) Consistency. An agent's actions tend to be consistent with any commitments it makes to other agents.
(3) Social Validation. An agent tends to conform to that which is validated by many in a group e.g. beliefs, values, etc.
(4) Liking. An agent tends to say yes to (i.e. conforms, complies goes along with) those agents it likes e.g. physical attractiveness, similarity, compliments, co-operation etc.
(5) Authority. An agent tends to conform or comply with agents who have authority e.g. experts, official position etc.
(6) Scarcity. An agent tends to desire those things that become less available e.g. limited supply, one time sales, last opportunity, exclusive information etc.

Much of the data presented by Cialdini [pp.66-67 2001b] comes from professionals whose business depends on persuasion e.g. marketers, advertisers, sales people, fund-raisers etc. He suggests that "a kind of natural selection operates" -- alluding to Dawkin's revived notion of memes -- with unsuccessful tactics, due to loss of business, being removed from the marketplace of ideas. From all those surviving tactics, it is possible to identify the aforesaid strategies. Furthermore, Cialdini cites a cross-cultural study by Morris, Podolny and Ariel which offers support for the six key factors with a proviso. As an aside within his article, Cialdini [p.67 2001] concludes:

> Do the six key factors in the social influence process operate similarly across national boundaries? Yes, but with a wrinkle. The citizens of the world are human, after all, and susceptible to the fundamental tendencies that characterise all members of our species. Cultural norms, traditions and experiences can, however, modify the weight brought to bear by each factor. .... In sum, although all human societies seem to play by the same set of influence rules, the weights assigned to the various rules can differ across cultures. Persuasive appeals to audiences in distinct cultures need to take such differences into account.

We can gain insight from this because persuasion is an attempt to make us "take up" (that is, conform or comply with) the opinions of others. This is shown through a cognitivist's interpretation of the findings. First, there is reciprocation. In a debate, if you are agreeable, concede some points etc. then your opponent and audience will reciprocate in like manner. Second, there is consistency. In a debate, you can expect the opponent and audience to maintain a consistent position. This may assure some common ground and expectancy in a debate. Third, there is social validation. In a debate, if you persuade your opponent and audience that any assumption, claim or even position you hold are held equally by some or many other; then they will tend to concur or at least be more open to what you say in defense of your position. Fourth, there is liking. In a debate, to persuade others to your position make yourself likeable through physical attractiveness, persona and sociability etc. Fifth, there is authority. In a debate, you can maximize the persuasiveness of your position through promoting your own expertise or referring to experts and their work. Sixth and last, there is scarcity. In a debate, when there are few if any appeals, arguments or criticism against a position, then there is scarcity of ground for disbelieving it. An agent might argue that the scarcity of opposition to its claim gives strength to its claim -- where, in fact, this isn't so. An extreme version is the argument from ignorance *(argumentum ignoratum*). Because there is no argument or evidence to the contrary, then the claim is likely to be right. Sadly, some people are persuaded, even convinced, by this argument.

2.2.2 Interests, Attitudes and Appellation

The need for psychological insight, let alone an appreciation of its psycho-physiological basis, was recognized by Peirce [pp.154-55 1904]. In more recent

times, Billig [pp.82-83 1987] in *Arguing & Thinking* emphasizes the importance of *both* theory and practice; and the need for a social psychology of persuasion and argumentation in discourse. He states:

> The [practical] side of rhetoric was inevitably based upon psychological assumptions, whether or not these were just shrewd intuitions held by practising orators, or were fashioned by the theorists into an academic systems. The ancient teachers of rhetoric recognised that, to be successful as a persuader, the orator must possess psychological insight. The experts might have disagreed amongst themselves about the other skills required of an orator, but they all stressed the need to study the thoughts and feelings of the audience.

In the same sentiment, to this we may add the thoughts and feelings of one's opponents in a debate. In ancient time, these concerns were touched upon by Cicero [106-43 BC] in his dialogue *De Oratore*. Here, I attempt to develop in part a theory of mind that offers a theoretical underpinning for persuasion.

In ancient Greece, "the personification of 'winning over', more loosely, 'persuasion'" is Peitho. Though her concern was with what "makes woman available to man in the context of love and marriage, her divine status is not fixed" [p.412 Price and Kearns eds. 2004]. Given that persuasion is analogous to seduction, it is not surprising that she was generally glorified as the goddess of persuasion. Indeed, the playwright Euripides [c.480-408 BC] was lead to declare that: "there is no shrine of Peitho except words, and her altar is in human nature". This Euripidean insight is central to the hormic-hedonic (HH) infrastructure that I propose to account for the workings of psycho-social influence, especially persuasion. It is no great stretch of the imagination to view human nature as fundamentally defined by interests, both innate and learned ones; and, by impacting on these interests, agents can be psycho-socially influenced or persuaded with respect to other concerns. Here, I use this Euripidean insight to understand the workings of appeals and therefore persuasion.

Influence, Persuasion via Interest Satisfaction. How then do appeals work? To explain how they work on agents, a reasonable and plausible cognitive architecture (CA) of the mind is required. Agents begin to develop a theory of the

mind (TOM) early in life. The presumptions of their mental models may be innate ideas, commonsense, upbringing, personal insight, the sciences or philosophy. The importance of a TOM is most evident in literature. The novelist, poet, screenwriter etc. tell us stories about people that rest on the author's presumptions about the workings of minds. This involves a tacit model of the CA of minds, which is ultimately responsible for animating characters in some story. But is it a reasonable and plausible basis for "driving" the story forward? A similar question can be directed at scientific and philosophical conjectures concerning with agency and action generally. Attempts to model (and even map) the mind go back centuries. This reflects a common interest in understanding the self and others. For example, the Freudian notion of a "psychic apparatus" is a 20th century attempt to do so. It is considered by Pribram and Gill [1976] to be the precursor to what is known today as CA's of mind. Freud [CP. 1856-1939] considered that the psychic apparatus consisted of the ego, superego and id that are regularly in conflict with each other but are nonetheless the basis of action. Today, we'd be inclined to talk of inter-communicating modules [Fodor 1983] that self-organise through competitive and co-operative processes [Arbib and Hanson 1987].

Clearly, designing a CA to explain how appeals work is a tall order. Though I think that a design of the CA of minds is possible in the future, I merely wish to give sufficient character to an infrastructure, which can adequately account for inter-agent influence such as psycho-social influence and persuasion in discourse. Generally, I posit an agent paradigm based on cognitive ecologism. An agent's mind is continuous with the world by way of the agent's action in community and Nature. This outlook is in sympathy with views expressed by Piaget [1971] in *Biology & Knowledge* and Pugh [1978] in *The Biological Origins of Human Values*. Both emphasize innate structures, ecology and evolution. Furthermore, Pugh proposes and argues that the mind is a natural complex value-based decision system. There are innate values; other values relating to culture, intellect, morality etc. experientially "grow out" of the genetically-determined value system inherent to an agent's motivational makeup. Essentially, he proposes a decision-theoretic ecology of agency and action. Eschewing many mechanical models of behavior, Pugh favors of one based on a concept of purposive behavior, a view promoted

by Tolman [1932] in *Purposive Behavior*. Thus, the activity of agents in the world is goal-oriented activity that involves value-based decisions. More specifically, I posit a CA of the mind based on the Euripidean insight. It relates attitudes to things e.g. propositions, theories etc. to interest satisfaction. Fundamentally, this is the motivating basis of influences such as appeals, arguments and evidence.

The setting for such a theory is the semiotics of mind. Cognitive semioticism views the mind as a sign processing system, which includes language-processing sub-systems. These sign systems, by virtue of the finite nature of the CA, are also governed by the rules of some system of logic. Apparently, this is a consequence of finite agency. As Ayer [pp.85-86 1936/1947; p.114 1971] pointed out in *Language, Truth & Logic*, God has no need of logic as, due to his omniscience, all possibilities are revealed to him in the light of various criteria e.g. truth. Given this, the mental space [Fauconnier 1985; Dinsmore 1987] of current possibilities is limited, though the potentiality of the mind for possibilities is great. This is reflected in the grammatically-constrained string spaces of languages associated with thought and conversation in discourse. Furthermore, its consists of signs e.g. images, propositions etc. of finite expanse; and therefore the mental space is a logical space [Wittgenstein 1921] as logical rules are required to order them in thought and conversation, especially reasoning on both accounts. Consequently, logic is necessary to deal with a difference of opinion on an issue within an agent’s mind. An agent has to accept p or reject p, for instance. Depending on the circumstance, an agent may be led to accept (say) p and reject not-p in the logical space of current possibilities. In doing so, it has judged one as being more valued than another according to some criterion and therefore prefers one to the other. In doing so, it has formed an attitude to each. At the core of any criterion is interest satisfaction. One thing is valued more than and therefore preferred over some other thing according to its satisfaction of the agent's interests. Thus, an agent can attempt to influence another agent's attitude to a thing by getting them to realize that it offers interest satisfaction. This is due to a HH infrastructure of an agent's mind. It is the fundamental driving-force or "engine" of thoughts, feelings and actions. There are both hormic (purposive) and hedonic (pleasure-pain evaluative) aspects to this infrastructure. In what follows, I elaborate this partial TOM and

show how it explains the how and why of persuasion.

I start with sources of information about things. Some functions or faculties of mind are sources of information e.g. observation, memory, intellect etc. about things in some domain or world. Sources may be interpretative to some extent but there is nothing to suggest that they produce opinions, claims etc. as such. They merely present the agent with information e.g. experiences, propositions, theories etc. What is done with the information in the CA of an agent's mind is another matter. Clearly, a source is not enough to bring about an opinion or claim. They merely enable mental space to elaborate and extend its possibilities. What more is required (which will become apparent in due course) is influence. There are internal mechanisms of the mind that make this possible.

I now address those internal mechanisms. Essentially, they belong to a HH infrastructure of an agent's mind. The driving-force of an agent's thoughts, feelings and actions is an agent's interests. As a collection or system, they are called the passions. This system consists of two aspects. They are:

(1) The hormic aspect of the passions. This is based on a means-end conception. An interest of an agent includes a goal and plan/s for achieving it. Agents tend to have an agenda of interests.
(2) The hedonic aspect of the passions. This is based on an attitude-satisfaction-habit conception. Agents value and eventually prefer things to an extent that is based on interest satisfaction; concurrently, those extents lead to habit formation and regular activities.

I shall briefly comment on each. First, consider the hormic aspect of the passions. What is the origin of the interests? The traditional accounts are:

(1) Innate ideas. Interests are hard-wired means-end structures that have evolved in a given species.
(2) Learned responses. Interests are soft-wired means-end structures

> that have arisen through upbringing, experience (imitation, recorded sources) or creative thought.

Those interests that are innate e.g. desires, urges, drives, needs, emotions etc. are conveniently referred to as instincts. Others are learned interests; however, even they are contingently differentiated from and therefore grounded in the instincts via the effects of experience. It is through these interests that influence can be brought about. Essentially, I concur with Pugh [pp.19-20 1979], amongst others, who puts it this way:

> There is universal agreement that behavior is influenced both by the basic biological drives such as hunger, thirst and sex; and by emotions such as fear, joy, sorrow, and pride. All these factors can be interpreted [understood] as manifestations of a complex, built-in system of values that motivates behavior.

He also distinguishes primary (natural) from secondary (cultural) value. The secondary ones are a developmental outgrowth of the primary values; and therefore rest on their innate motivating powers. Furthermore, it is generally agreed that the capability for self-organization i.e. learning and memory is itself genetically-determined and therefore an innate feature of CA's. Next, consider the hedonic aspects of the passions. This has to do with the innate pleasure-pain system and its elaboration with experience and learning. Normally, agents have a natural preference for pleasure rather than pain (unpleasure). Agents like and therefore prefer those things that satisfy their interests and bring pleasure. Working in tandem, these two aspects make up the HH infrastructure, the driving-force of thought, feeling and action. One crucial implication of this account is that even the faculty of Reason is functionally grounded in the HH infrastructure of mind, which in classical parlance is akin to the passions. This implication is critically examined in section 3.1.2 of the next chapter.

Influence, Persuasion and Attitudes. Influence can result in attitude formation and change. Some things in mind or the world have a bearing on an agent's interests. Hence, agents accordingly develop attitudes to them. An attitude expresses a valuing of a thing; and a preference i.e. bias, propensity, tendency etc. for this

thing rather than another thing in the mental space of current possibilities due to a value-based decision-making mechanism. Generally, an attitude to a thing X can be one of the following:

(1) Acceptance of thing X;
(2) Suspending judgement of thing X; or
(3) Rejection of thing X.

Generally, an agent's attitude to a thing X (like-indifference-dislike) depends on the extent of interest satisfaction (pleasure-neutral-displeasure). This applies generally. A thing X can be a proposition, theory, value, rule, action etc. Where a proposition p is concerned, those attitudes are:

(1) Acceptance of proposition p with some associated uncertainty or probability of p and a corresponding confidence of the agent.
(2) Withholding or suspension of judgement of proposition p with an associated uncertainty or probability of p at zero and a corresponding confidence of the agent at zero..
(3) Rejection proposition p with some associated uncertainty or probability of p and a corresponding confidence of the agent.

The result is an opinion. An opinion involves a proposition and an attitude to that proposition. For instance, if *I declare that my opinion* is that "UFO's are manned space vehicles from a hidden planet in the star system of alpha centuri" then I mean that *I alethically accept or believe the proposition* that "UFO's are manned space vehicles from a hidden planet in the star system of alpha centuri ".

An attitude toward a proposition p can be determined by psycho-social influences or persuasion in discourse. Describing them as psycho-social covers psychological effects due to interacting with the world e.g. things in Nature, artefacts etc. and/or other agents and community. Simply stated, there are three modes of psycho-social influence. They are:

(1) Experience. A proposition p becomes collaterally valued, preferred and habituated (or otherwise) via interest satisfaction arising from an agent's action in the world, including those involving other agents.

(2) Appeals. A proposition p becomes valued, preferred and habituated (or otherwise) via interest satisfaction arising from appeals in discourse.

(3) Arguments. A proposition p becomes valued, preferred and habituated (or otherwise) via interest satisfaction arising from arguments in discourse.

Both (2) and (3) rest on the appeal corpus of an agent; (3) is a rational kind of (2); and (2) and (3) can involve linguistic and non-linguistic forms of expression. Psycho-social influences involve influence over an agent's actual or potential attitude to thing X. Where discourse -- and especially critical discussion or debate -- are concerned, the thing X is a proposition or theory p and the influence is called persuasion. Persuasion involves the use of appeals in social exchanges e.g. conversation, public speaking etc.; and, it may be directed at others and perhaps even the self. Where an agent is appealing to its opponent and audience, there are two sides to consider. On the one side, there are the interests in persuasion -- to persuade persuadees to the persuader's position. On the other side, there are the interests of the opponent and audience. They are essentially committed to interests which may be the target of persuasive activity. Amongst other things, there are commitments to permissible appeals.

Appeals to Reason only work because an agent is committed to some view of Reason and its importance in forming opinions or claims and therefore ultimately forming commitments. Rational persuasion of others and perhaps even the self rests on commitment to Reason and principles of rationality. This is enacted by means of arguments and ultimately a rational ground or case. In section 4.2.2, it is argued that the (net) persuasive support strength of arguments and case is based on cogency. A good Reason can only influence and be influenced by the use of arguments in discourse. This is done by appealing to the rational interests of an agent's Reason and/or appealing to them to commit to standards of Reason.

Some of the rational interests of Reason are critically discussed in section 3.2.1. For example, there may be collateral effects on the passions generally; however, they are usually resisted by Reason as a point of rational self-discipline.

To fully appreciate this view, it is worth giving a demonstration of how it works in the case of opinions, appeals and arguments in discourse. Consider the issue of psi-phenomena or extra-sensory perception (ESP) in parapsychology. ESP involves telepathy, precognition, clairvoyance etc. and other such phenomena. There is an opinion p that ESP phenomena are real and suggest that there might be particles or force-fields associated with life and/or mind that we don't fully understand at this time. If this is true, then there is something special about intelligence or mind in the Universe. It may even be a spiritual phenomenon, as the spiritualism in the early 20th century seemed to suggest. This cosmological possibility may not only intellectually fascinate me but it also seems to give "meaning to life". In other words, it offers satisfaction of some of my interests. Because of this, it has got my attention. However. I have other interests to consider: my commitments to Reason and principles of rationality. For me this includes having empirical evidence for claims. Hence, I go in search of a body of evidence concerning ESP phenomena. I read authors on the topic, sit in on seminars, critically read papers from journals and articles from magazines, go to conferences where I discuss the topic with experts; and even join a society etc. Typically, I engage in much reflection and conversation on the topic. In doing so, I am aware of the various appeals and arguments that have come my way. Some appeal to my Reason (rational interests) while others appeal to my passions (other interests). On the one hand, Reason compels me to reject ESP phenomena. On the other hand, my need for feeling part of something special -- to have meaning in my life -- compels me to accept ESP phenomena. However, I'm inclined to cognitively ignore appeals and fallacious arguments. The net result is that I'm compelled to reject the opinion in favor of ESP phenomena. Thus, I have formed an attitude, albeit a rational one, to such an opinion.

Overall, when appeals are expressed with the use of rhetorical figures, an agent is endeavoring to appeal to some of the interests of its opponent and audience.

Appeals only work to the extent that the agents are more-or-less committed to certain ways of being psycho-socially influenced, persuaded or convinced relative to their other interests.

2.3 Opinion and Persuasion

Experience suggests that an agent's opinion can depend on persuasion. Here, I critically examine and discuss this dependency of opinion on persuasion; and its implications for thought, feeling and action. This dependency is illustrated by the confidence-uncertainty-strength triangle of figure 2.3. It is abstracted from the previous agent-opinion-ground triangle of figure 2.1. It is my view that the jurisprudential model offers some important insights that are important to the theoretical framework developed here. The rudiments can be found in the psychology of law and is based on two conceptions, the meter model and story model. Regardless of the origin of these insights, I assert that the framework can encompass opinions and claims generally – not only in law but also in mathematics, science, medicine, intelligence etc. and, of course, everyday life.

2.3.1 Attributes and Measures

In dealing with the aforesaid attributes, a general meter model is used. It is illustrated in figure 2.4. There are features of the cognitive architectures of minds that are graduated and perhaps ultimately scalable e.g. a pleasure-pain scale. Historically, an interest in the measurement of psychological features, especially those relating to opinion and persuasion, is not new. Suffice it to say that Bentham [1838], Keynes [1921] and Ramsey [1926] have discussed the problems of measuring such features. For example, Keynes [1921] discusses those suggested by previous authors. And, Ramsey [p.161 1926], in his critique of Keynes' notion of probable inference, makes mentions of it: ".....It is.....conceivable that degrees of belief could be measured by a psycho-galvanometer or some such instrument.....". With regard to the three aforesaid attributes I shall, on each occasion, critically discuss the concept and then a possible scale of measurement for the attribute.

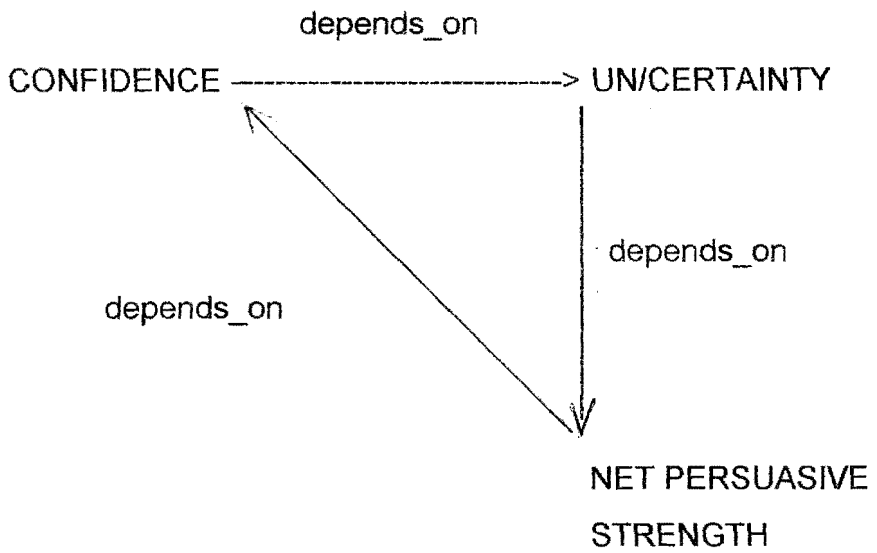
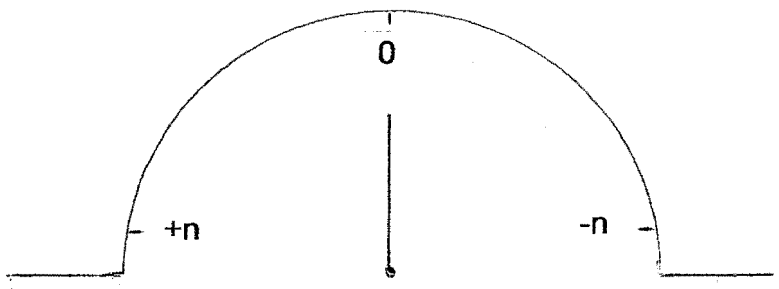


Figure 2.3 Confidence-Uncertainty-Strength Triangle. This shows the dependency relationship between the attributes of the previous agent-opinion-appeal triangle (of figure 2.1). The relative attitudinal uncertainty (including doubt) of an opinion depends on the net persuasive support strength (weight) of the ground that supports the position in relation to opposing positions in discourse.

(A) Dial



(B) Scale

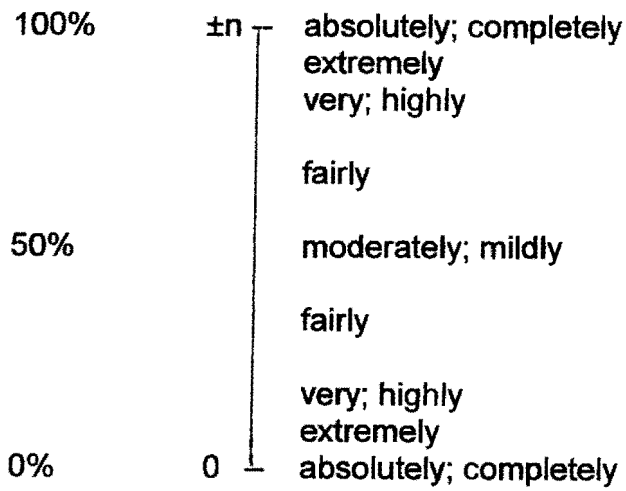


Figure 2.4 Meter Model. The meter model suggests that agents have mechanisms "in the head" that are analogous to measuring devices. The declared limits of the range of values reflects the inherent limits of cognitive architectures. Some attributes involve degrees (or grades) of values; they include belief (alethic uncertainty), persuasion (persuasive strength), persuasiveness, persuadability or resistance, eristic power.

Agents and their Confidence. A fundamental condition of agency is having confidence, certainty or assurance in an opinion, claim, rule, value etc. Language use suggest that confidence has the greater compass so it will be the starting-point. The OED [p.705 III 1989] defines “confidence” as follows: “The mental attitude of trusting in or relying on a person or thing; firm trust, reliance, faith. ..... The feeling sure or certain of a fact or issue; [that is,] assurance, certitude, assured expectation”. The OED also suggests that confidence can be good or bad. Where it is bad, “assurance [is] based on insufficient or improper grounds; [or] excess of assurance, over-boldness,.....presumption, imprudence”. This is an apt warning of the dangers of having unwarranted over-confidence let alone having unwarranted under-confidence. Clearly, it is the agent that has confidence in a position, including the opinion and ground associated with it.

Now I consider a possible scale of measurement. It can be said that an agent can have a "degree of confidence" in an opinion or claim [Ramsey p.198 1926]. But what then is an appropriate scale for confidence? I suggest that it can be measured in the normalized interval of [0,1]. Agents, for instance, can have no confidence (0) in their ability ranging up to full confidence (1). It doesn't seem to make sense to speak of an open scale of confidence; that is, one that goes to infinity. Experiences of confidence and The physical limits e.g. energy ranges for cognitive architectures suggests that confidence is bounded.

Opinions, Uncertainty and Probability. Associated with the degree of confidence of an agent is “the degree of opinion” [Bentham 1838] and “the degree of belief” [Bentham 1838; Mill 1859; Russell 1913; Keynes 1921; Ramsey 1926] that relate to opinions or claims. Where claims and belief are concerned, this is called doxastic gradualism.

Intuitively, there is a difference between the proposition p and the opinion p. What then is the basis for this difference? We can get some insight by critically examining (say) Baldwin and Stout [p.171 v.1 1901] on "certitude or certainty". They state:

> [Generally, it is] the degree of assurance felt with reference to something presented to the mind. [More specifically, the] .....term is employed to express degrees of belief or conviction. It is then applied to all cases from the slightest tendency to accept a proposition or fact.....up to so-called 'complete certitude', or knowledge. Certain authorities limit certitude to the highest degrees of assurance where the possibility of doubt is excluded. .....

In this account there is a subtle mingling of a number of notions. On careful reflection, there appears to be at least three features:

(1) Attitude. The proposition p is accepted, withheld or rejected as regarding its truth status;
(2) Truth. The proposition p is true, undetermined or false.
(3) Uncertainty and doubt. There is a relative uncertainty regarding (1) with respect to (2) above.

These are features crucial to belief even though they are not immediately apparent. For instance, in classical propositional logic theory the truth-value of p tacitly comes with full acceptance and certainty; and truth values are usually, strictly true or false. Indeed, in some accounts these attributes are used to characterize what a proposition is. Each notion is now critically discussed.

First, there is truth. An early insight into belief graduation and truth is put forward by Abp. Thomson in his *Laws of Thought* [p.240 Sect.118 1860] wherein he states: "The amount of belief we have in our judgement has been called its Modality, as being the mode in which we hold it for truth". Truth is a feature of claims; that is, propositions or theories. Here, a proposition can be true, false or it might well be undetermined. That is:

$$t \in \{\text{true, undetermined, false}\}$$

An undetermined truth-value is one that is undecided by the agent or is perhaps indeterminable. Thus, truth is a tri-valued attribute. Given this, truth is not graduated as such. However, what about grades of truth? Strictly speaking, it does not make literal sense to consider degrees of truth. The classical understanding

in physics endorses this view, though under some interpretations of quantum mechanics a case might be made for degrees of truth in some sense. Fundamentally, though all objects and systems are quantum in nature, that aspect becomes negligible for everyday, classical things.

Second, there is attitude. Attitude expresses how an agent values and prefers one thing to another. It can apply to many things on many bases of worth or goodness. This includes the alternative propositional possibilities associated with the opinions that arise in mind and community. However, I shall focus on claims and beliefs as they are central to the issues addressed in this thesis. What is stated for beliefs is analogous to what can be said about opinions generally. Where preference is based on truth, then it expresses an alethic attitude. There are three attitudes an agent can take:

(1) Acceptance. An agent accepts that p is true;
(2) Suspension (or withholding) of judgement. An agent suspends or withholds its judgement as to whether p is true or false; and
(3) Rejection. An agent rejects that p is true; that is, p is false.

These options for attitude can be expressed as follows:

$a \in \{$ acceptance, suspension, rejection$\}$

They apply to opinions generally and claims (or beliefs) in particular.

Third and last, there is alethic uncertainty or alethic probability. This has to do with the assurance an agent attributes to an opinion on the basis of some ground. The term is often applied to both the agent and the object. Baldwin and Stout [1901] recognize this happens with other terms and expressions. On "certainty" they say:

> Like other terms..... certitude is often carried over from the mind [of the agent] to its object and made a property of the latter; we [then] say a proposition has certitude. ..... [T]his is legitimate as a short way of saying that a proposition is fitted to arouse certitude, or has a certain to degree of

probability.

I concur with Adamson, who is cited by them. The notion of "feeling un/certain" has been carried over to objects, events etc., including propositions and theories. To avoid confusion I reserve "confidence" for agents; and “uncertainty”, “certitude” and “doubt” for opinions and claims.

The other point they make has to do with certitude and degrees of uncertainty or probability. Everyday experiences are replete with examples of this. For instance, I strongly believe (in other words, I'm very certain or sure) that at this time "The Sun will rise tomorrow" whereas I weakly believe (in other words, I'm not very certain) that "Tomorrow's weather will be overcast and windy". However, the notion of "degrees of belief" is misleading -- mainly because of the different meanings of "belief". Beliefs are contents and contents don't come in degrees. You either have them or you don't. For instance, an agent's understanding of God, expressed in propositional form, doesn't come in degrees. Agents don't have degrees of the God-concept or God-beliefs. However, a belief does have an attribute of alethic uncertainty that comes in degrees. For instance, I can be very certain or highly doubtful about the existence of God. So, on the one hand we have beliefs and on the other hand we have some degree of uncertainty of the belief. Clearly, what we have in the notion of degree of belief is a belief-confidence conflation, confusion or a serious misnomer. What we can say is that opinions and beliefs are contents that at least have the feature of doxastic certainty or certitude. Generally, uncertainty is easily appreciated as occurring in grades or degrees [Mill pp.344, 389, 570 1859]. Hence, though beliefs (as contents) don't come in degrees their feature of uncertainty properly does. If we don't discard the expression "degree of belief" then we must understand it to be a shorthand for "degree of uncertainty of a belief". Similar views regarding beliefs have been expressed about uncertainty. Adamson [pp.170-71 v.1 1901] points out that certainty and certitude are used in absolute senses with reference to an "assertion or judgment". In using such terms it is important to distinguish the following:

(1) "The content of the assertion made, and

(2) The attitude of the asserting mind".

Apparently, certainty can be graduated though the term is sometimes used to mark complete certainty or certitude. It is perhaps convenient to reserve "certitude" for this condition in stark contrast to doubt.

Today, there is an emerging preference to refer generally to uncertainty rather than certainty. I think this is a post-Cartesian recognition that being uncertain is the natural fallibilist state of agency. In *Effectual Faith*, Preston [p.24 1631] counsels: "We may say of doubting as we say of Thistles, they are ill weeds, but the ground is fat and good where they grow". This emphasis on uncertainty and doubt is apparent in modern science and mathematics. The term is used in many contexts for imprecision in measurement in physical systems (physics, chemistry); ambiguity and vagueness in language (linguistics); lack of clarity in debate (law) including risk and insurance in financial matters (economics). They suggest a bias for using the term "uncertainty" over "certainty" where empirico-theoretical studies are the concern. Unlike other disciplines, mathematics has a bias for "certainty". However, as noted earlier, with the demise of Hilbert's program and the theorems of Gödel there has emerged a reluctant appreciation for uncertainties where mathematical structures are concerned. Typically, an agent can have full certainty (certitude) or partial certainty, which may be viewed as reflecting the gamut of certainties from full to none.

With the rise of probability theory and issues regarding its application, degrees of uncertainty have come to be recast in terms of some probability conception. The use of "probability" in deference to "uncertainty" is, I think, due to some apparent numerical similarity. Like probability, we may posit an interval

$c \in [0, n]$ where $n=1$

On this interval, 0 is full uncertainty or doubt whereas 1 is full certainty or certitude.

Now I consider a possible scale of measurement. What is an appropriate scale for

degree of belief? I shall attempt to construct the whole from parts. I start with degrees of alethic uncertainty. We might consider these possibilities:

$$c \in [-n, +n] \text{ or } c \in [0, 1]$$

There are facts to consider. Mind-brains are natural systems with limited energy ranges regardless of the information code used by them. This does indicate that there are lower- and upper-bounds: there are times when agents are absolutely certain or uncertain about an opinion or claim (belief). What should this value be? This is arbitrary and for convenience, if not by convention, might as well be [0,1] as it is for probability in statistics. Does it make sense to have a negative uncertainty? I don't think so. Here, we must be cautious not to confuse negation as in "not" with the negation of numbers. For instance, consider the claim p that "God exists". As I grow up, I am exposed to many sources of knowledge on the issue of God's existence along with the experiences of life. My confidence in p soon wanes and I am in doubt. I'm very uncertain. At some point I begin to believe not-p; that is, "God does not exist". And my confidence in not-p is growing. Though I now strongly believe in not-p my confidence is not negative. It is the same confidence I had for p but now I have it for not-p. As far as I can make out, notions like confidence or uncertainty have numerically positive values. It doesn't appear to make sense to have a numerically negative value. However, where our concern is with the alethic uncertainty of a proposition, there is a use for sign. Even though alethic uncertainty is positive within the interval [0,1], sign appears appropriate for the alethic attitude or the truth status of p or both. Next, I turn to alethic attitude. The three attitudes of rejection, withholding (or suspension) and acceptance may be represented thus:

$$a \in \{-1, 0, +1\}$$

There is no degree of acceptance here. Last, I turn to truth. Again, there are three values: false (F), undetermined (U) and true (T). They may be represented as follows:

$t \in \{-1, 0, +1\}$

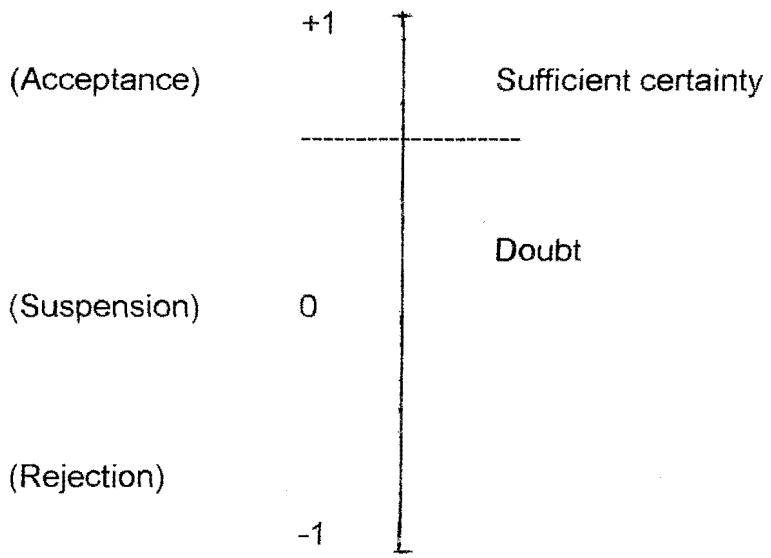
The values are like attitude -- there are no degrees of truth as such. These three sets of numerical values can be combined into one scale. Thus, given trinary truth, we can by convention have a positive (+) sign for true and a negative (-) sign for false. This is shown in figure 2.5 where it is interpreted as a meter model for the alethic uncertainty of a belief in the interval [-1, +1]. For a given opinion p, it may be accepted (+) as true (+) with some degree of uncertainty n for $0 \leq n \leq 1$; or judgement is withheld/suspended (0) as its truth is undetermined (0) and there is no certainty at all; or it is rejected (-) as it is not-true or false (-) with some degree of certainty where $0 \leq c \leq 1$.

Appeals, Persuasive Strength or "Force". Experience suggests that there are degrees of persuasion. In debate, some appeals or arguments are more-or-less persuasive than others. This position is called rhetoric gradualism. Bentham variously refers to ".....persuasion [being] more or less strong.....", "the force of persuasion" and the "intensity of persuasion"; in other words, "degrees of persuasion" [Bentham pp.12-18 1838]. In discussing the un/due effect of evidence and the use of exclusionary rules to regulate this, Bentham [p.12 1838] refers to persuasion. He states:

> So order matters, as far as may be, that on each individual occasion, whatsoever evidence comes to have been received, shall not, in respect of the degree of persuasion produced by it in the mind..... operate with an effect great today its due effect.

Clearly, the effects Bentham is concerned about are those relating to persuasion, rational or otherwise. Items of evidence may differ in their persuasiveness or persuasive strength; and, thereby one may speak of degrees of persuasive strength; or, in short, degree of persuasion. This typically applies to appeals, arguments and bundled together as a ground or case. "Strength" and "strengthen" occur in numerous contexts to do with achievements of the body, moral effort, military force, fortified locales, authority, faculties of mind etc. Force and strength are closely related notions.

(A) Degree of Opinion (e.g. degree of belief)



(B) Degree of Persuasion

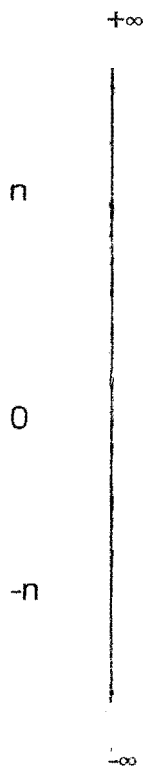


Figure 2.5 Scales of Measurement. In (A) degrees of opinion (or where claims are concerned, degrees of belief) is interpreted as degrees of attitudinal uncertainty. For degrees of belief, its alethic uncertainty or probability. And, in (B) degrees of persuasion is interpreted in terms of degrees of persuasive support strength (weight). This scale may be closed at ±n or open to ±∞.

My focus here is on strength in relation to the appeals and arguments of agents in discourse. Under "to strengthen" the OED [p.882 XVI 1989] recognizes its application in discourse and debate. "To strengthen" is “..... to increase the strength or force of (reasons, obligations); to support (a case, an opinion) by additional evidence; to give increased strength or vigor of style to (a composition). .....”. In contrast, there is the opposite "to weaken". The OED [p.37 XX 1989] also recognizes this. "To weaken" is “..... to lessen or destroy the strength of (an argument, case, etc.); to render (a probability) less likely. ..... To render (faith, resolve, conviction) weaker. .....”. For instance, the claim that "The Sun will rise tomorrow" is strongly persuaded by arguments which appeal to past experiences -- even a consensus of experiences -- and dynamical models of the solar system which is accepted by the majority of practitioners in the scientific community of astronomy and astrophysics. Whereas the claim that "Tomorrow's weather will be cloudy, wet and windy" is weakly persuaded by arguments that appeal to feelings I have in my bones or to my faculty of precognition which is not regarded as a reliable source of knowledge by current science at this time. Clearly then, the persuasive impact of rhetorical figures used by a persuader roughly ranges from strong, moderate to weak grades. Metaphorically, they differ in their strength or "force" to persuade. Thus, strictly speaking, we are talking of degrees of persuasive strength.

Strength has (as it does in the context of physics) an associated notion of weight. Under "strength" the OED [p.880 XVI 1989] recognizes the notion of weight in the context of reason and argumentation. Here, "strength" is "demonstrative force or weight (of arguments, evidence); amount of evidence for (a case)". There is an appreciation that the strengths of arguments (or evidence) can be accumulated and summated such as to arrive at their weight. It is typically used in law for the strength of "the body of evidence". In a similar spirit, it is used for the ground or case of a position. Indeed, weight may be thought of as a net persuasive support strength. And, just like force and strength in physics, they have a "direction" indicated by sign. This covers appeals etc. that are for (pro) or against (con) the opinion or claim of a position on an issue. Intuitively, and as best as we can, we identify the pluses and minuses of appeals used in dialogue and summate them

for each position. The totality of appellative moves or appeals used in the context of conversation is the ground or case The totality of positive and negative strengths is called the "the weight of argument".

Now I consider a possible scale of measurement. What, then, is the appropriate scale for degree of persuasion? We might consider these possibilities:

(1) $(-\infty, 0, +\infty)$
(2) $[-n, +n]$

Unlike degrees of belief, the possibilities *prima facie* have no bound. Apparently, the scale has to be open as in (1) because we don't know the bounds on appellative or argumentative contingencies in discourse, though presumably there might well be. However, given the limits of fallible finite agency it may be necessary to impose them as in (2). For instance, it doesn't seem possible that the cognitive architecture of an agent can be physically open to accommodate very large net persuasive (support) strengths no matter how carefully refined the schedule of appeal forms assigns strengths to the various accepted forms of appeals or arguments.

What then about sign? Here, I think it makes sense to talk about degrees of persuasion in terms of ± sign. An opinion or claim p has appeals put forward that support or oppose it. Furthermore, the net persuasive strength (or force) of all (known) appeals or arguments of the ground for or against p can turn out to be grossly negative (opposition) or positive (support) or zero (opposition-support balance). Clearly then, sign conveniently marks whether appeals are in opposition to or support of p. This is shown in the previous figure 2.5 where it is interpreted as a meter model for the persuasive strength of an appeal, argument, ground or case for an opinion or claim in the interval [-n, +n]. Given operational limits such as energy range and the fact that some people, putting aside hyperbole, declare that they are "fully persuaded" or are "absolutely convinced" then there is a *prima facie* case for an absolute value for persuasive strength in some sense. And even if there is such a limit, it may be for economic reasons as in law. For example, in

law, court cases have to be finalized in good time.

Sign and Zero. With respect to degrees of belief and persuasion, there are some outstanding concerns relating to the use of sign and zero as they are relevant to uncertainty and strength. I shall critically examine these concerns after briefly considering the general nature of sign and zero in mathematics. Consider what Gellert and others [p.27 1975] say about the integers:

> There are situations in everyday life in which the natural numbers are insufficient to characterize certain quantities, opposing two opposing tendencies, two opposite directions are possible for them. ..... to characterize these opposing tendencies the relevant numbers are provided with a sign. ..... the positive numbers +1, +2, +3, ... and the negative numbers -1, -2, -3, ... which are obtained when direction is taken into account, together with zero (strictly speaking ±0) are called integers.

They offer examples from measurable quantities relating to temperature and elevation. What is interesting about this understanding of integers is its take on numbers, sign and especially zero. Strictly speaking, zero is represented as "±0" and "0" is an abbreviation for this. Zero can serve its numerical role in both the order of positive numbers and negative numbers. In terms of measuring scales which use sign and zero, zero marks a point of indifference or directional doubt. As Heathcote [2004] puts it: on such scales, an agent is indifferent or "agnostic" at zero.

Now I focus on sign and zero with regard to opinion, especially claim, and persuasion. First up, consider ± sign. With regard to belief p, the degree of belief c (interpreted as the degree of uncertainty or probability) as to the truth of p covers the following:

(1) Attitude: acceptance (+), suspension/withholding (of judgement) (0) and rejection (-);
(2) Truth: true (+), indeterminate (0) and false (-); and
(3) Bounded uncertainty: Degrees of assurance that is usually named and/or interpreted according to some probability conception with

regard to (2): [0,1].

Also, for a ground G in relation to belief p, the degree of persuasion (measured by net persuasive strength) covers the following:

(4) Support/Opposition: net support (+), net equipollence (0) and net opposition (-); and
(5) Un/bounded persuasive strength: either [-∞, +∞] or [-n, +n].

Net support/opposition are conditions of preponderance in contrast to equipollence. These are the essential features that go to making up degrees of belief and degrees of persuasion, respectively. They are represented in the measuring scales shown in the previous figure 2.5.

Now consider zero values. Can we really make sense of zero (or null) as it relates to belief and persuasion? Do they really have a place; and, if so, what is it? Generally, there are two positions on zero. They are:

(1) Zero exclusion. A zero value is excluded from the scale of measurement for a quantity. For instance, it doesn't make sense to talk of zero uncertainty (or probability) or zero persuasive strength. Apparently, there is no belief or persuasion as such.
(2) Zero inclusion. A zero value is included in the scale of measurement for a quantity. For instance, it does make sense to talk of zero uncertainty (or probability) or zero persuasive strength. Apparently, there is a proposition or appeal form with this attribute even though it has a zero value.

My position is in favor of zero inclusion. I shall critically examine such a view for both belief and persuasion. First, consider the belief scale. There are two reasons for including a zero value. One reason is that even though the truth of claim p is in doubt, it could well turn out to be either true or false. Another related reason is that a claim p is the kind of thing that can be a belief, and therefore it can be either

true or false, whether or not a determination either way comes to pass. Both reasons necessitate a place marker on the scale. Indeed, the use of zero on a scale is often put down to fulfilling such a purpose. Next, consider the persuasion scale. An analogous case to the above can be made for a zero value on a scale for persuasion. However, there is something more to consider in relation to the ground for a belief p and the associated net persuasive support strength (or weight). There are two rhetorical conditions where there is a zero value. They are:

(1) Groundlessness. There is no ground g in net persuasive support of p; therefore the net persuasive strength is zero.
(2) Equipollence (or counterbalance). There is a ground g in net persuasive support of p but the appeals for and against balance out to zero.

Condition (1) can be thought of as an extreme case of (2). On the balance sheet of appeals, zero accumulative support and zero accumulative opposition balance out to a net persuasive support strength of zero. Also, it is possible that one appeal (or argument) is given but "it amounts to nothing". What these and the above conditions indicate is that claim p has the potential to be (say) a belief; and zero on a scale of measurement represents that condition. Overall, zero inclusion is appropriate for measuring scales relating to belief, persuasion and anything derived from them e.g. knowledge, as will become apparent in the last chapter.

2.3.2 Opinion-Persuasion Relation and Thresholds

There is a fascinating dependence of opinion (including claim, belief etc.) on persuasion. It was argued in section 1.2 that disputes – specifically, critical discussions or debates – involve opposition and persuasion; that is, the discourse of debate has a dialectical-rhetorical character. In critically examining the aforesaid dependency, I shall do so in the context of persuasion and then in the context of opposition in discourse.

First, the focus is on persuasion. Previously, it was indicated that opinions can't be

taken up or changed by coercion or blind motivation unless an agent's regulatory principles permit this. It appears that it can only be achieved by psycho-social influence or persuasion where there is language use. I now state this dependency as a principle for persuasion:

> Opinion-persuasion thesis: The confidence an agent has and the associated net (alethic) attitudinal uncertainty of its opinion or claim is dependent on the net persuasive support strength of the ground (or case) for that opinion or claim, which is strategically developed in discourse.

The recognition that assurance invested in or conferred on an opinion by an agent depends on the impact of appeals, including arguments, goes back to Grecian times. It is at the foundation of opposition and persuasion in discourse. Rational variants are most apparent in comments by Ramsey, Keynes and Russell for example. Keynes [1921] in *A Treatise on Probability* refers to a belief-evidence relation that ties the degree of belief to the evidence for it. And, in *Why I'm not a Christian*, Russell [Pref. pp.v-vii 1957] states:

> A habit of basing conviction upon evidence, and of giving to them only that degree of certainty which the evidence warrants, would, if it became general, cure most of the ills from which the world is suffering.

There is an implied causal relation. All things being equal, the attitudinal uncertainty an agent assigns to an opinion or claim is causally dependent on the net persuasive strength of the ground. This includes all recognized appeals made in support, defense, attack and criticisms in a dispute, which have a bearing on the agent's attitude. Fundamentally, all this relies on the appeal forms that the agent is rhetorically susceptible to. The agent may not even be aware of the appeal forms because they are habits arising from upbringing and culture; or the agent may have deliberately re-trained itself and is fully aware of the appeal forms that can persuade itself. Furthermore, this relationship may reflect something fundamental and general about agency: a relationship between attitude and interest satisfaction. In this respect, it can be speculated that the c-axis (from top to bottom) of attitude is a general acceptance-withholding-rejection scale with an

associated assurance; and the s-axis (from left to right) is a general pain-indifference-pleasure scale of interest satisfaction.

OPR-T and the Class of Sigmoid Functions. What function is appropriate for the opinion-persuasion relation with thresholds (OPR-T)? The appropriate function should at least take into account the features critically discussed concerning degrees of belief (alethic uncertainty) and persuasion (persuasive strength), respectively. Because of the requirements suggested for degrees of persuasion and belief, I am led to the class of sigmoid functions or ones like them. They are sometimes called S-shaped functions (or curves) because of their similarity to the integral sign that is an old form of the letter S. The curve of a sigmoid function is "a monotonically increasing curve between two horizontal asymptotes and having a point of inflection" [Nelson pp.384-385 1998]. The integral of the Gaussian (normal) distribution of statistics, and many other distributions, have a sigmoid form. Because of the variety, there is the job of choosing amongst them.

In spite of this, it is therefore proposed that the mechanism of persuasion in relation to an opinion or claim generally operates according to an S-function. A more precise statement is:

> Sigmoid conjecture (S conjecture). The opinion-persuasion relation with thresholds (dependency) for an agent (or group) in an evolving population (of a species) is a function from the class of S-shaped (sigmoid) functions with thresholds.

Why select sigmoid functions? Theoretically, neural nets, if sufficiently populated, can implement just about any function [Franklin 2004]. Of course, practically we have to take into account the physical bounds of neural nets; and their fit to the circumstances of the agent. One reason for this choice has to do with meeting the requirements of the previous accounts of degrees of belief and persuasion. I think it's the only kind of function to characterize the persuasion-opinion relation. It is biased at the top and bottom. In both regions of the curve, an agent has to be subject to appeals of sufficient quality and quantity to make a difference in its

attitude. This seems to be a cautionary safeguard -- prudent, if you like -- which has evolved. The right non-linearity could prevent procrastination or a rush to judgement. Another reason has to do with the evolution of cognitive architecture (or minds) of nervous systems, especially brains. Recall that cognitive architecture is a dependent feature of the mind-brain system of an agent (cognitive naturalism). The cognitive architectures (including sub-systems of the brain-mind) within the population of agents (for a given species) evolve according to Darwinian principles of natural production, variation and selection. This applies equally to the evolution of sigmoid persuasion-opinion functions with thresholds within the population of cognitive architectures for the species. Such functions seem appropriate to the bounds of natural cognitive architectures (or minds) and the adaptive flexibility required in the face of ecological contingencies - including those in discourse.

How should the class of sigmoid functions be specified? Given the functional expressiveness of neural nets and the evolutionary development of intelligence -- subject to the influences of Nature and culture -- allowance has to be made for the possibility that some relations might be sigmoid-like or borderline. Furthermore, it is possible that S-functions in a population shifts about in the space of functional possibilities due to evolutionary contingencies. With these conditions in mind, I propose two types of representative functions which seem *prima facie* appropriate to the persuasion-opinion relation with thresholds.

Generally, the opinion-persuasion function f is given by:

$$c = n.f(s) \text{ with thresholds at } \pm\hat{o} \qquad \text{Eq . 2.1}$$

where:

n = 1 for convenience. There might be mitigating contributing factors

c = the net degree of alethic uncertainty (or probability) of the opinion p.

s = the net persuasive (support) strength for the ground of p.

$\hat{o}$ = threshold of sufficiency in the interval [-1, +1] on c at $\pm n$.

An opinion -- of a position on an issue -- is supported and defended by a ground

G (or case). The net alethic uncertainty (or probability) c is determined by the agent's OPR-T using the net persuasive (support) strength s of its ground which is given by:

$$s = \sum_{j}^{i=0} (\pm s_i) \text{ where } s_i \in [+1, -1] \qquad \text{Eq.2.2}$$

The value for strength is due to the values assigned to appeals based on the schedule of appeal forms used by the agent. Now I specify two types of representative functions for f. Type 1, as shown in figure 2.6 (A) is defined as follows:

$$c = \begin{cases} 0 \text{ up to } -(\delta/2) \\ \sin s \text{ from } -\delta/2 \text{ to } \delta/2 \\ 1 \text{ thereafter} \end{cases}$$

with thresholds at $\hat{o} = \pm n$ where $n \in [+1, -1]$. Eq.2.3

This function has a ceiling and floor at m±1, respectively. Type 2, as shown in figure 2.6 (B) is defined as follows:

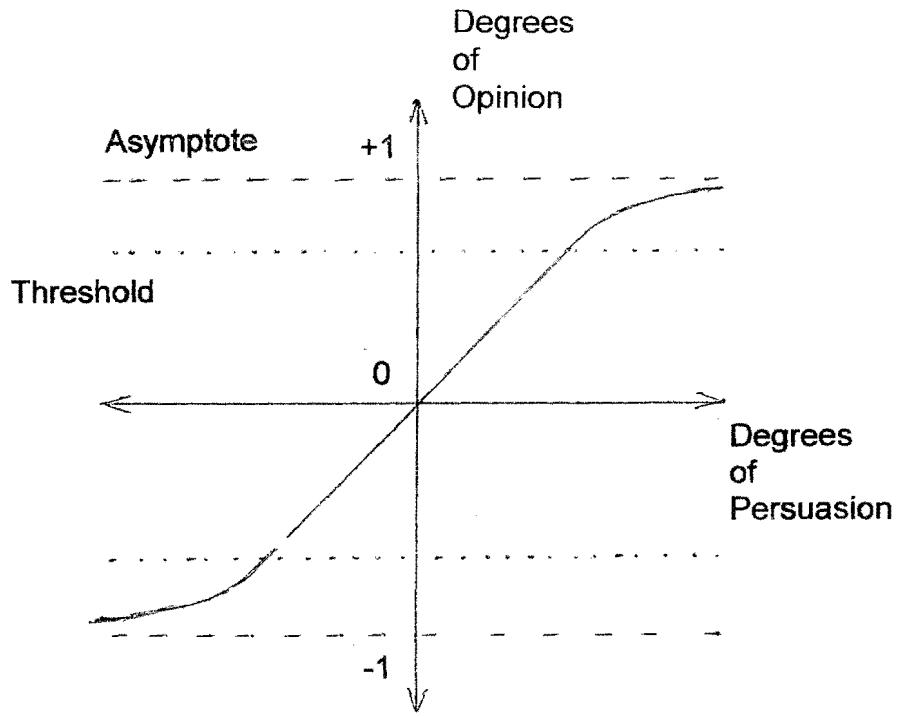
$$c = 1/[1+ \exp(-s)] \text{ with thresholds at } \hat{o} = \pm n \text{ where } n \in [+1, -1] \qquad \text{Eq.2.4}$$

This function has asymptotes at m =±1 respectively. Given this, a graph with kinks (say) is given by:

$$c = 1/[1+ \exp(-s^3)] \text{ with thresholds at } \hat{o} = \pm n \text{ where } n \in [+1, -1] \qquad \text{Eq.2.5}$$

A sigmoid function with kinks is achieved by replacing s in a sigmoid formula with s^3.

(A)



(B)

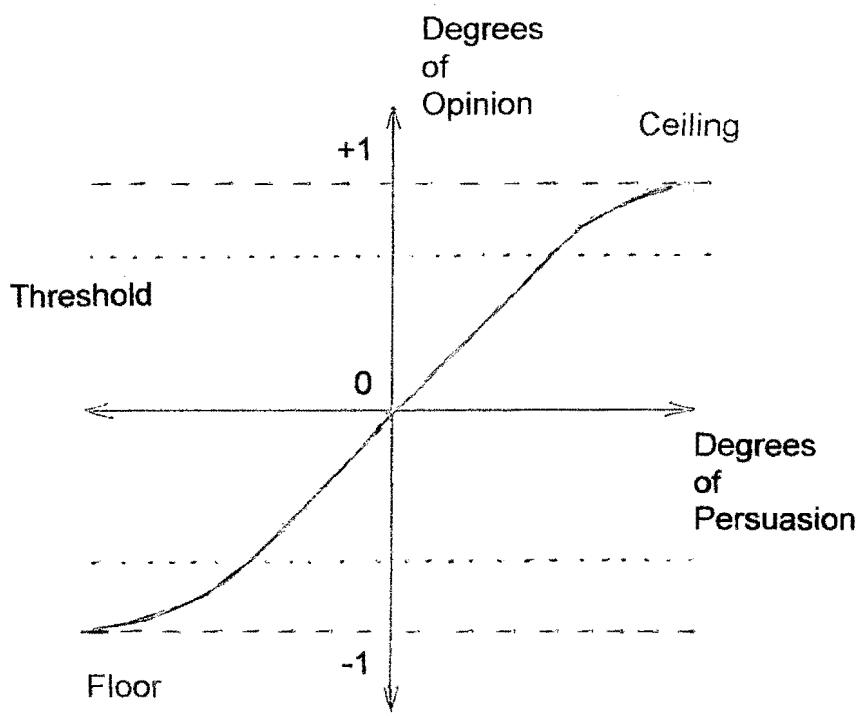


Figure 2.6 Opinion-Persuasion Relation with Thresholds and the Class of Sigmoid Functions. The OPR-t is most likely a sigmoid function. Two sub-classes are (A) S-functions with asymptotes and (B) S-functions with a ceiling and floor. Type (A) may be viewed as theoretical and type (B) practical in nature.

Which of the two equation types is appropriate? Generally, I think type-2 is the one. It reflects the medium in which the function is realized; that is, a mind-brain or its equivalent. Such systems operate within finite bounds. Specifically, it is necessary to critically examine its features not only to fully characterize it but also to give reasons for the respective feature. Before proceeding I point out that what I say henceforth is underwritten by a naturalistic stance: all psycho-social phenomena is driven by the internal activity of the cognitive architectures of the minds of agents. Essentially, minds are the engines of community and society.

Continuity and Discreteness. The sigmoid functions are presented as continuous functions. But is this so? It is a fact that neural nets, such as those in nervous system operate as signal processing systems of the discrete non-linear dynamical kind. More precisely, they are evolved discrete non-linear dynamical systems. Both synaptic gaps and the refractory period of neural nets impose discreteness on their operation, not to mention the solitonic – that is, the non-linear wave-particle – nature of neural signals. Therefore, describing the persuasion-opinion relation using continuous functions is a technically convenience (even approximation) to the facts of psycho-neural phenomena.

Boundaries. Depending on the sigmoid function type, there are two boundaries: asymptotes or ceiling-four pairs. In both cases, the degree of belief is confined to the interval [0,1]; whereas for degrees of persuasion it is not so clear-cut. Just as degrees of confidence and belief have an upper limit, as per the energy limits all of cognitive architectures so must persuasive strength. However, being not God - by this I mean not having omniscience - one could never know the limit of appeal/argument contingencies. Hence, in principle at least, the function has to be open and therefore asymptotes are used. Is there any way around this? Yes, I think there is but it is not perfect. It's a fallibilist approach but one open to adaptive adjustments. We replace the asymptotes with a floor-ceiling pair in relation to a cut-off line at (0, ±1). By adjusting the shape of the sigmoid curve, it can be made to intersect the cut-off line at different points. An intersection much further along the cut-off line can more-or-less approximate the presence of asymptotes. It is difficult to appreciate the curve incrementally approaching the

asymptote to infinity. It is more likely that the curve has a cut-off line. As energy changes are most likely discrete in cognitive architectures, there can't be successive smaller changes to infinity as required for asymptotes.

Parameterisation. Parameterisation of the persuasion-opinion sigmoid function is possible. This allows for individual differences and circumstances to be taken into account over time. More precisely, these include:

(1) Different cognitive styles;
(2) Context/domain dependencies; and
(3) Intellectual development

Setting the value of the parameter in such a generic function enables a specific function to be defined to take into account one or more of the above. Overall, this can take into account the psycho-social development of the agent over time.

Threshold of Satisfaction. Another important requirement is a threshold of satisfaction. The threshold is the cut-off for having sufficient (or enough) net certainty for an opinion or claim in relation to the net persuasive strength of the ground. Why the need for thresholds? The threshold marks the preferred grade of certainty at which it can be permitted to inform an agent's actions. Beliefs about the world are used in formulating action. Eventually some action becomes habit for better or worse. Generally, actions can be determined at any degree of certainty for the relevant beliefs. And the urgency and timeliness of actions in some situations may not permit an agent to establish a degree of belief that meets or exceeds the threshold of satisfaction. In other situations such as the law, medicine and engineering the importance of being sufficiently certain in beliefs that inform actions is crucial. This requirement gives impetus to develop a good standard for establishment (and even proof). However, there is a requirement of timeliness. In whatever domain, the business of life necessitates that the agent be moved to (in)action in a timely way. There has to be a cut-off where an agent decides whether or not it is sufficiently persuaded (or convinced). This is well recognized in Intelligence circles by what is called "the paralysis of analysis"

syndrome. An Intelligence Analyst may get caught up in the cycle of gathering and analyzing evidence of varying grades; and never get around to deciding when "enough-is-enough". Military leaders and politicians require timely and accurate evidence. The courts of law have recognized this: court cases cannot go on forever waiting for all the right arguments to be invented and all possible evidence to be discovered. As such there are economic limits to the investment of time, effort, intelligence (information) and monies. Intuitively, everyone has a sense of when "enough is enough"; and this can be represented by a threshold.

Where should the threshold be located? The threshold of satisfaction is placed perpendicular to the axis for degree of belief. This is in accordance with the standards of proof in law which includes such standards as: "on the balance of probabilities" and "beyond reasonable doubt". There is more to this than some traditional convention. It is a claim with the right degree of belief that is the basis of action so it makes sense to place the threshold of satisfaction here rather than on the axis for the degree of persuasion. Though it could be placed on both, there is economy in not placing it on both axes as its explicit placement on any axis implies the other.

Variations. Generally, I think the sigmoid persuasion-opinion function captures the true psycho-social conditions of the agent and its community. However, variants of this class of functions are possible. These variants, from an evolutionary stance, are to be expected within a community of agents. As far as variations go, we might expect approximations and extreme versions of sigmoid functions. Agents may have good reasons to take up a stance and act according to a particular persuasion-opinion relation. There may be aspects of context, situation and domain which compel their acceptance. So, what are the variations? It would not be possible to describe all of them because such a space of possibilities may be countably infinite or uncountable. However, I'm inclined to think that evolution has favored the class of sigmoid functions for this space of possibilities.

Finally, there are a number of mitigating factors, which characterize the cognitive

style of an agent in relation to the OPR-T. Those factors include:

(1) The shape of the graph
(2) The positioning of thresholds.
(3) The schedule of appeal forms (which includes assigned strengths).
(4) The appeal corpus of (3).

An agent can make adjustments to any of these factors. By finding the right mix, the agent can fine-tune the system to improve the chances of success e.g. identifying the truth. I shall take an extreme requirement to demonstrate the point. Ideally, having absolute certainty is prima facie the best basis for beliefs that are used to inform an agent's actions. There are various appeal mixes that can make this very easy or difficult to achieve. That in itself does not guarantee the agent really has the truth. The quality-quantity mix of appeals that make up the ground associated with a persuasion-opinion relation is crucial. Furthermore, the truth might well be had before having absolute certainty. A well-placed threshold along with other well-adjusted factors makes for good decision-making in the circumstances and in relation to the domain the opinion refers to.

Now the focus shifts to opposition. It is important to recognize that the OPR-T of an agent or group operates within the context of a topic and a situation that usually involves opposition in discourse. The driving-force in a contest of opposing positions is persuasion; however, the presence of opposition has implications for how the OPR-T works. For example, suppose Hansel and Gretel are roaming the misty forest near their home. Gretel, looks through the mist of the forest before them; and the following conversation ensues:

Gretel: "There’s a witch coming toward us!." (p)
Hansel: (Pauses and looks.) “No, there’s not.” (q)

Now it may turn out that this brief exchange is a prelude to a debate about apparent or real mysterious figures in the mist of the forest. Is there a witch or not? A resolution may have implications for how they view their safety in the forest.

Suppose they do indeed engage in a debate. The claims p and q contradict one another; and therefore both can't be true.

Furthermore, given that Hansel and Gretel, due to being siblings with the same parents, growing up in the same environment and being emotionally close to one another more-or-less have the same OPR-T; then, two important things can be said. First, there is the logical point:

q = not-p

Gretel's opinion p is the logical opposite of Hansel's opinion q. Also, p and q are represented by the pairs (s_p, c_p) and (s_q, c_q) on the same OPR-T graph G. As previously indicated, "probability" is used for different probability conceptions, including as a substitute for "uncertainty". In fact, today "probability" is more commonly used; and "uncertainty" has come to be a covering term for a coterie of doubts like randomness, vagueness, probability etc. Given this, the OPR-T doesn't necessarily imply a probability-based dependency between p and q. If we take the probability calculus of statistics as our guide, then:

Prob(p) = 1 - Prob(q)

where p and q are disjoint and the only two possibilities. This doesn't hold for degrees of uncertainty where the OPR-T is concerned. This equation doesn't necessarily apply even though probability is defined on the interval [0,1]. The graph G, taken as generic for the two agents, shows assigned points for p and q. If a time-axis t is added to G to give a G-t graph, it is possible to track Hansel's and Gretel's assigned probability ratings for q and p respectively in relation to their strategically developing grounds as they proceed to debate with one another. During all this, the aforesaid probability relation will not be sustained. Though their respective grounds strategically depend on one another in the determination of the net persuasive support strengths, the assigned alethic probabilities for these logical opposites are independent of one another.

2.3.3 Opinion Change and Revision

Opinion change and revision may be treated as synonyms or distinguished by the type of change. This is best appreciated by first identifying the types of change which can occur. They are:

(1) Variability of opinion. The attribute/s of an opinion change over time.
(2) Constituency of opinion. Some opinions within a body of opinion are added, deleted or modified over time.

Generally, (1) can occur without (2); however, (2) requires (1). For instance, I may have a fairly good ground to believe that "there is life on Mars". The net persuasive (support) strength of the ground for my belief may change and correspondingly the alethic probability of the claim but I still accept it. When presumably new evidence comes in and that is taken into account without passion-or-prejudice, it might well be that I'm compelled to reject the claim outright. Not only have the attributes of my belief set changes, so too have the constituents changed, including logical consequences.

Opinion Change and the OPR- T. Generally, what is critically discussed here, covers opinions and sub-types like claims (alethic opinions). Claims can intrinsically occur as possible beliefs, and even knowledge, in the minds of agents. Rational belief change and revision, at least in pro-science circles, is understood according to Bayesianism [Bayes 1763-64], more recent modern versions like the Dempster-Shafer theory of evidence [Dempster 1968; Shafer 1976] and other theories that attempt to address their failings. These theories are versions of probabilism to wit: an agent's degree of belief is measured by probability. They rest on the probability calculus, which is the foundation of statistics. However, a thorough critical review of Bayesianism and its cognates is not possible at this time, though I do revisit them in section 5.3.3 of the last chapter. Suffice it to say that they suffer from a number of ailments e.g. the initial value problem, old certain evidence etc. What is proposed here is a more general alternative view. It includes rational approaches to belief changes and revision that are based on

arguments. Like Bayesianism etc. the OPR-T proposal has a problem with initial values; however, this can be treated as an aspect of learning and adaptation of the agent's OPR-T to its circumstances. Hence, the initial configuration of the OPR-T is arbitrary, though some genetically-determined initial setting might be present. Furthermore, the OPR-T for an agent is for some opinion p; and this is independent of any alternative q and its associated alethic uncertainty.

Consider then an opinion p, which is entertained by an agent. This agent currently operates according to its own OPR-T. The current doxastic state of p is represented by a point (s, c) on the graph for the OPR-T where c is the net alethic uncertainty and s is the net persuasive (support) strength. Given this, and agents attitude to p is one of the following:

(1) Acceptance. An opinion p is accepted by the agent when $0<c \leq +1$.
(2) Withholding or suspension. An opinion p is withheld or-suspended by the agent when c=0.
(3) Rejection. And opinion p is rejected by an agent when $0>c \geq -1$.

where c is the alethic uncertainty (or probability) and ±ô is the threshold of establishment. These judgments relating to p depend on the net persuasive (support) strength s of the ground G for p in relation to the agent's OPR-T. As the OPR-T involve a c-s dependency, change $\triangle$s results in a corresponding change in $\triangle$c for p. Given this, there are four possible changes that can occur. They are:

(1) A change in the value of c without a change in the attitude for an opinion p.
(2) A change in the value of c such that it equals or exceeds the benchmark of establishment.
(3) A change in the value of c such that it falls below the benchmark of establishment.
(4) A change in the value of c with a change in the agent's attitude for an opinion p.

Each of these possibilities are discussed in turn. First, consider change (1). The value of c at point (s, c) increases or decreases but the attitude to p remains the same, though it is relatively stronger or weaker. Of course, that only applies to the acceptance or rejection of p. Now consider change (4). The value of c at point (s, c) crosses the origin (0,0) thus resulting in an attitude change. If previously accepted, p is now rejected; or if previously rejected, p is now accepted. Now consider change (3). The value of c at point (s, c) increases to such an extent that it equals or exceeds the threshold ±ô. This means the agent is convinced of the truth or falsehood of p; and p becomes a conviction. Finally, consider change (3). The value of c at point (s, c) falls as something happens to cast doubt on the ground for p. Typically, the doubt is due to concerns regarding one or more of the appeals or arguments used during the debate. When one, few, some, many or all of the appeals are called into question, then the net persuasive strength of the ground is insufficient to establish opinion p.

Object- and Meta-Systems. It is important to recognize that in highly evolved agents, there are object- and meta-systems. Meta-systems at least involve opinions about opinions. And we might suppose that the locus of the self system is to be found in the meta-system within the cognitive architecture of agents. Where constancy and change of opinion systems are concerned, the possibilities are amply summarized in table 2.1. Changes or no change to the point (s, c) for opinion p on an agent's OPR-T can be caused by changes in the meta-system governing the nature of the OPR-T and its associated schedule of appeal forms. Essentially, this transforms the OPR-T and in doing so may effect the coordinates of the point (s, c) or its status in relation to thresholds and the turning-point of opinion (0,0). Those changes include:

(1) Positional change of the thresholds ±ô;
(2) Form change e.g. slope, curvature of the sigmoid curve;
(3) Appeal corpus and its schedule of appeal strengths;
(4) Any combination of the above.

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OBJECT SYSTEM

META-SYSTEM	**STABILITY**	**CHANGE**
STABILITY	No changes to (s, c) as object- and meta-systems are stable.	Change to (s, c) due to changes in object-system
CHANGE	Change to (s, c) due to changes in meta-system	Changes to (s, c) due to changes to both object- and meta-system.

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Table 2.1 Opinion Constancy and Change. Opinion revision in discourse for both object- and meta-systems of opinion.

Note that I shall generally speak of appeals, grounds and establishment. But what I say applies equally to arguments, cases and proofs, as they are proper sub-types of these categories. I shall now critically examine each of these possibilities.

First, consider the circumstance where there is constancy in both kinds of opinion systems. What this means is that the OPR-T of an agent for a given context and domain remains unchanged. It also implies that the net persuasive strength of the ground for a given opinion (or opinion system) and its alethic uncertainty remains unaltered as well. In short, no changes have occurred.

Second, consider the circumstance where there is change in the object system while the meta-system is stable. What this means is that the OPR-T for a given context and domain remains structurally unchanged; however, the uncertainty-strength values for the opinion system might change as shown in figure 2.7 (A). Given a particular OPR-T with threshold for a given context and domain, the obvious way in which opinion change or revision occurs is through change of the net persuasive strength of the ground for a opinion. The possibilities are:

(1) The net persuasive strength may rise or fall relative to the threshold of proof.
(2) The net persuasive strength starts at or may fall below zero thereby changing the alethic status of the opinion.

In (1) the net persuasive strength changes as appeals and criticisms i.e. objections, rebuttals etc. strategically play out in the discourse of a debate. This can effect the agent's preparedness to take action in situations where the opinion informs that action. However, in (2) something more dramatic happens. Not only does a change in net persuasive strength of the ground (or case) change but the opinion as well. The agent is now inclined to a different attitude toward the proposition. Recall section 2.3.1 on the conditions where the net persuasive strength is zero. A persuasion-opinion-time graph allows us to distinguish two possibilities.

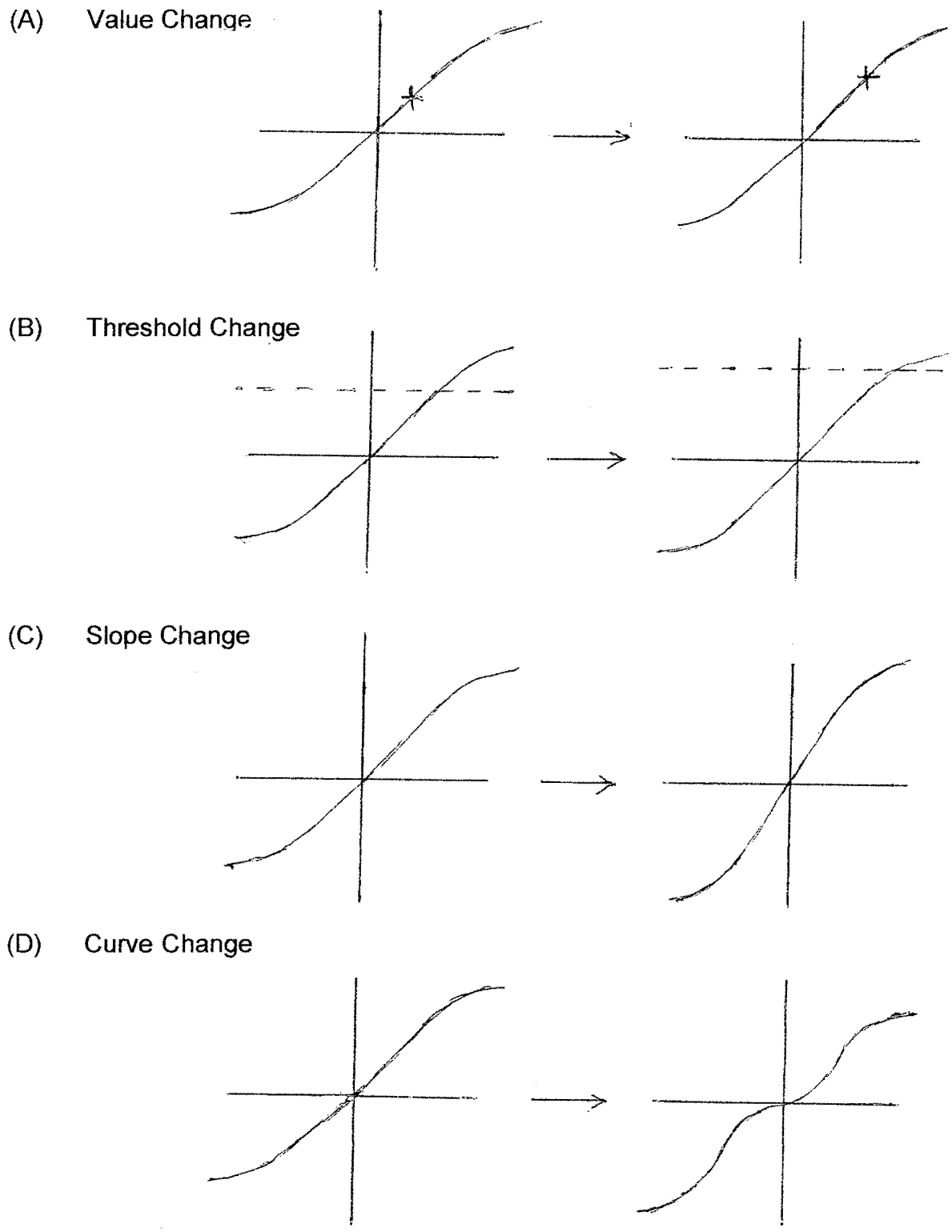

Figure 2.7 Transforms of the OPR-T and CPR-T. Four types of transforms of the graph for a sigmoid function with thresholds that mathematically characterise the OPR-T or CPR-T. Such changes have an impact on the (s,c) pair for an opinion or claim.

One possibility is where there is a new opinion -- especially in circumstances where an issue has not been addressed before by the agent. The other possibility is where the net persuasive strength has decreased to zero through argumentation.

Third, consider the circumstance where the meta-system changes and the object-system is stable. What this means is that the OPR-T with thresholds for a given context and domain structurally changes. The possibilities are:

(1) There is a shift of the threshold where the persuasion-opinion function remains constant. See the previous figure 2.7 (B).
(2) The persuasion-opinion function structurally changes from one shape to another where the threshold remains constant. See the previous figure 2.7 (C, D).
(3) Both (1) and (2).

These possibilities are shown in the previous figure 2.7 (B)-(D) on the basis of an arbitrary reference graph. Some examples are:

(1) A shift in the shape of the persuasion-opinion function may reposition the (s, c) closer or further away from the thresholds.
(2) A shift in the threshold repositions the (s, c) pair closer or further away from the threshold.

Such structural shifts impact on our opinion systems and therefore our decisions and actions which are based on them. In such different regimens, for instance, a scientific theory may convincingly be accepted or rejected; or, in a court of law, the defendant is shown to be guilty or innocent of the charges. Apart from different contexts and domains, this is another reason why it is necessary to consider parameterised persuasion-opinion functions with thresholds. This specifies a class of persuasion-opinion functions with thresholds. For a given context and domain -- if not generally -- it is possible to envisage a transition function which maps a persuasion-opinion function with threshold to another. In this way we can capture

reflections of the 2nd-order opinion system.

Fourth and last, consider the circumstance where there is change in both opinion systems. What this means is that a conceptual upheaval is underway. In the philosophy of science, Kuhn [1968] would call this a crisis resulting in a paradigm shift in understanding in a discipline or worldview; and Foucault [English trans.1972] generalizes and applies this to his study of power and the knowledge structures of institutions in society. Thought unlikely, such a radical change in the law of evidence while a court case is in progress, would require a default position e.g. deference to the conditions that prevailed at the start of the court-case; or the court would have to accommodate both changes in is operation and deliberations. Essentially, this possibility is a composite of the second and third situations above.

Overall, the sigmoid conjecture posits that evolving populations of self-organizing intelligent agents operate according to a context-sensitive sigmoid OPR-T both individually and as groups. These agents, groups or even communities most likely have sub-classes based on preferences or biases. Over time, through learning and (mal)adaptation, agents and groups will change their OPR-T; and its associate schedule of appeal forms, especially as regards acceptable forms and associated persuasive (support) strengths. It is "a question of balance" in determining the right function-with-threshold in the space of possibilities and in relation to on-going classes of circumstances.

2.4 Convincing, Conviction and Action

Finally, how are opinions and claims (beliefs) related to actions? Dissatisfied with the notion of belief in his time, Bain was inclined to define it as "that upon which a man is prepared to act" [Passmore p.100 1957]. Peirce was influenced by Bain's account in formulating his pragmatism. According to the pragmatism of Peirce, the important thing about the claims we make (or the beliefs we have) are their practical consequences in action. In *Belief, Truth & Knowledge*, Armstrong [p.220 1973] captures this and more in his account of beliefs. He states:

> Beliefs about particular matters of fact (including beliefs whose content is an unrestricted existentially quantified proposition) are structures in the mind of the believer which represent or 'map' reality, including the believer's own mind and belief-states. The fundamental representing elements and relations of the map represent the sorts of thing they represent because they spring from capacities of the believer to act selectively towards things of that sort.

Beliefs (or systems of them) are contents set within the cognitive architecture (or mind) and have an intentional character that represents or maps reality. What agents want is to have enough confidence or assurance in their opinions and claims. After all, those beliefs inform decisions as to what actions to take in achieving their goals.

Bain held that "believe is essentially related to action". Schiller [p.119 1900], an ardent critic of the limits of formal logic, upheld similar views in *Problems of Belief*. He states:

> ..... [It] is generally recognized that beliefs tend to express themselves in action, and that men's acts are affected by the beliefs. Hence it becomes possible to use action as a test of the force and genuineness of belief. A belief that is not strong enough to affect action can hardly be more than half-belief. A belief that is professed but not acted on is, very likely, spurious. The test which action provides of the genuineness of a belief appears to be so valuable that in the case of a discrepancy between what a man says and what he does we usually regard his acts as more significant than his professions of belief. For the latter are often false, intentionally or unintentionally, and as it is harder to act a lie than to utter one, when his acts give the lie to his ‘beliefs’, it is legitimate to question the sincerity of the beliefs.

Clearly, action can give us insight into an agent's beliefs. What is crucial -- beyond the test for genuineness -- is the force with which an opinion is held as a precondition for being used to inform action. How does this work? And, what strength of attitude is required for use in action? The view I propose is based on the OPR-T (including the CPR-T as a sub-type) and the associated dialectical-rhetorical framework developed thus far. It is summarized in figure 2.8. The opinion held by an agent -- and available to inform its actions -- is accepted to some degree based on the ground, which supports it.

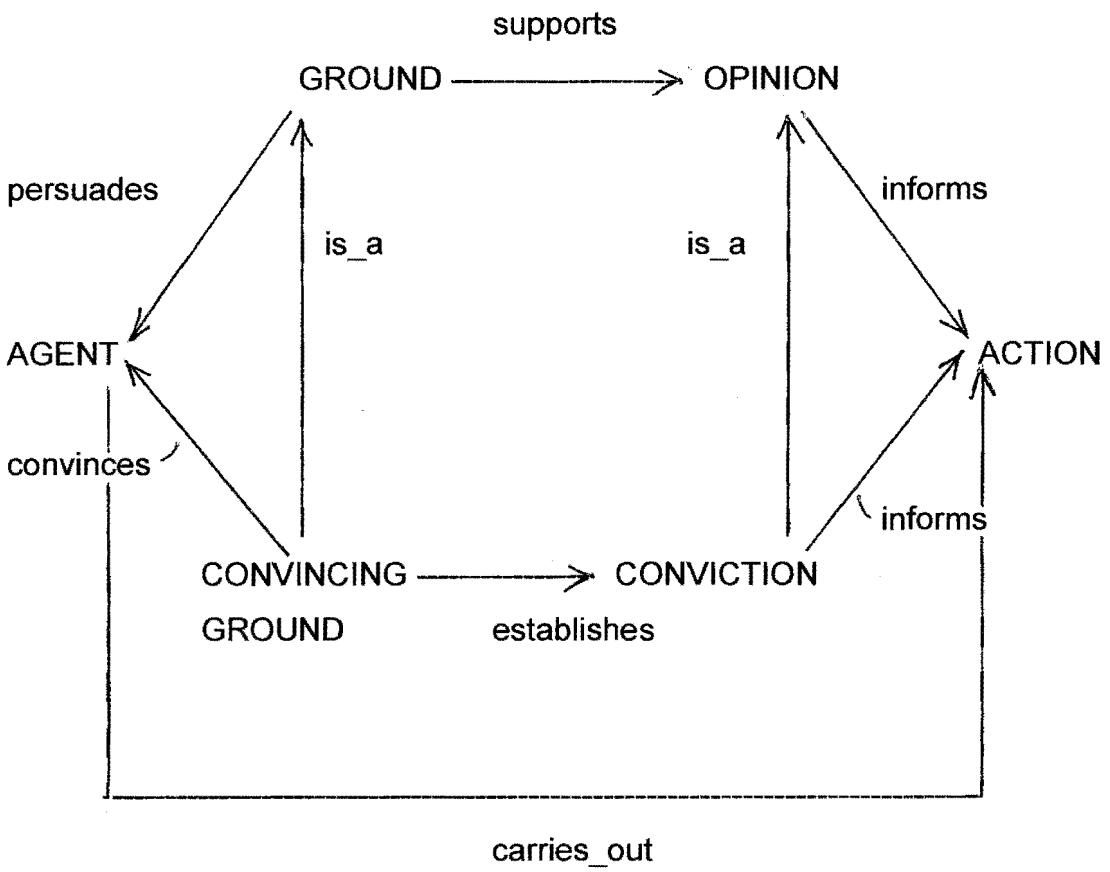

Figure 2.8 Opinion, Ground and the Basis of Action. Though not always possible, an agent only uses opinions or claims to inform its plans and actions if it is convinced and the opinion becomes a conviction with regard to those opinions or claims. For example, a claim becomes a conviction when the agent has been convinced that it has alethic worth; that is, it is the truth.

The ground is strategically developed in discourse; and is what persuades the agent to accept it as probably true to some degree. Clearly, as shown by the OPR-T there is a range of values in the interval [0,1] where zero is full uncertainty (doubt) and one is for certainty.

But there is usually, as experience attests, an on-going tension between:

(1) The urgency of action e.g. timeliness; and
(2) The need for good beliefs e.g. reliable ones based on a good strong ground.

This impresses upon the agent or group. To have a good belief (that is one with a high alethic certainty or probability), the agent must be in possession of a ground with a high net persuasive (support) strength based on the use of a good schedule of appeals or arguments. When a ground attains a net persuasive strength that equals or exceeds the benchmark of establishment (BOE) -- for an agent, group or community -- then the bearer of the ground is convinced of the opinion. Such an opinion has a high enough net alethic certainty and is then a conviction; and, therefore the agent is entitled to act upon it.

This seems to be a reasonable and plausible position to take; however, there is a caution. This is touched upon by Locke [4.11.10 1690] who states: "He that, in the ordinary affairs of life, would admit of nothing but direct plain demonstration [or proof] will be sure of nothing in this world of perishing quickly". This is about the requirement of a convincing ground. In mathematics, a demonstration of a claim i.e. a theorem, corollary etc. inclines us to attribute full certainty to the claim. If we apply this standard to all beliefs before we are entitled to use them in action, then it is likely that no action is taken or we remove ourselves from situations requiring such actions. Even a BOE can be set so high as to be difficult to achieve. However, it can be made workable for our purposes. How then can an agent deal with the tension between the two requirements stated above? There is a design notion on engineering that might be useful in this respect: it is called graceful degradation. Pragmatic worth, associated with the OPR-T, may be used to rank

courses of action at different levels. Roughly, those levels might be:

(1) High: The opinion p, that informs a course of action a, is based on a very strong ground called an establishment or proof relative (perhaps) to some lesser opinion q.
(2) Moderate: The opinion p, that informs a course of action a, is based on a moderately strong ground relative (perhaps) to some lesser opinion q.
(3) Low: The opinion p that informs a course of action a is based on a weak ground relative (perhaps) to some lesser opinion q.
(4) Null: The opinion p that informs a course of action a is based on no ground (worth considering) relative (perhaps) to some opinion q.

Broadly speaking, relative to the BOE, there are three doxastic states of action. One is the convincing-conviction state. This is preferable for good agency in the world. An opinion only informs one's actions if there is a convincing ground such that the alethic certainty meets/exceeds the BOE. Thus, the opinion becomes a conviction and the agent is convinced of its truth. The next is the persuasion-opinion state. An opinion informs one's actions if there is some ground such that the alethic certainty of the opinion is not zero. And, the last is a state of equipollence. A judicious fine-tuning of the agents OPR-T and the associated schedule of appeal forms may improve those states. As our own experiences suggest, it is not practically prudent to insist upon a convincing-conviction state before carrying out action. Finite, fallible agents do not have this luxury.

CHAPTER 3: REASON AND PASSION

> Reason sits firm and holds the reins, and she will not let the feelings burst away and hurry her to wild chasms. The Passions may rage furiously, like true heathens, as they are; and the desires may imagine all sorts of vain things; but judgement shall still have the last word in every argument, and the casting vote in every decision.
>
> Charlotte Brontë
> *Jane Eyre*
> p.211 1847

The focus of my philosophical inquiry now turns to reason in discourse and dispute (dianoetics). Traditionally, much of our insight into discussion and debate (dispute) stems from our understanding of Reason and rationality in the discourses of early philosophy. My aim is to develop a theory of Reason as it relates to disputes and inquiry in discourse. In keeping with the Greek notion, the theory is called dianoetics [Gk. *diánoia*, a concern with understanding, cognition or intellectual activity; Peters p.30 1967]. Traditionally, it is understood as being in opposition with the passions. Like Hume I challenge this conception, though my approach to this is different: I suggest there is a functional dependency. Though I don't give a definitive account of dianoetics at this time, I endeavour to judiciously cover what I think is appropriate for my philosophical inquiry. Agents committed to Reason, rational codes of conduct and the use of arguments are common in disputes and inquiries.

First, Reason is an outgrowth of intellect and the hormic-hedonic infrastructure of mind. Essentially, it is impassioned rationally-principled self-reflective semi-autonomous intellect. Intellect itself can be a creative source of ideas and principles. Based on a hedonic-hormic (HH) infrastructure of mind, it is the passions which are responsible for pro-rational commitments. Rational agents have a passion for Reason: this makes Reason an influencer and influencee in discourse. Therefore, Reason can be both a source of and influence over opinion in discourse.

Second, I consider the nature of rationality. I suggest that rationality is a way of agency in the world that is based on the primacy of Reason in thought, feeling and action. Rationality involves thinking, feeling and acting according to good rational principles e.g. evidence-based critical rationalism and its associated principles.

Third and last, I consider Reason and rationality in action and discourse. There are two approaches to understanding disputes in discourse. One is based on a games metaphor; it is called game theory, a division of decision theory. It is critically examined in the light of special activity generally and disputes specifically. Another is based on a jurisprudential metaphor; it is called forensics [L. *forçnsis* Eng. -ic (s) belonging to a court of law, (conducted in); Barnhart p.400 1988]. Originally, Aristotle recognized it as a possible paradigm for opposition and persuasion in discussion and debate generally. Central to this outlook is organized opposition which involves the regimented contesting of positions using rational persuasion in discourse. This regimentation includes a standard of proof. It is important to recognize that there can be rational persuasion by means of reason, arguments, evidence etc. that essentially appeals to the interests of Reason. Overall, it is suggested that the two traditional approaches aren't necessarily opposed and that a game-theoretic rational dialectics, based on forensic insights, is possible.

3.1 The Mind and Reason

It is readily appreciated that intellect and Reason are functionalities, faculties or powers of the mind. Both are implicated in the thoughts, feelings and actions of agents. But what is the difference? And how are they related to each other? If we can't make sense of them, how can we ever make sense of rationality? Intuitively, we appreciate that there is a difference. Bagehot [II. 1879] attempts to capture that difference in this rather "chilling" description:

> We think of Euclid as of fine ice; we admire Newton as we admire the Peak of Teneriffe. Even the intensest labors, the most remote triumphs of the abstract intellect, seem to carry us into a region different from our

> own -- to be in a *terra incognita* of pure reasoning, to cast a chill on human glory.

Reason is something above human Nature in some sense. As I shall discuss later, there are a number of philosophers and scientists who suggest that the beasts have intellect along with man but not Reason -- something which is apparently "above" or "more than" the intellect. Here, I critically examine the nature of intelligence and intellect as the conceptual prerequisite for understanding Reason. In turn, this offers a conceptual basis for attributing rationality to agents, thoughts and actions.

3.1.1 Intelligence and the Intellect

Traditionally, both intelligence and intellect are important to understanding Reason. This importance stems from an intuitive appreciation that Reason is closely related to intellect and that both involve a degree of intelligence. Furthermore, theoretical debates in psychology tend to implicate one involving the other. Here, I only briefly examine the nature of intelligence as a prelude to a more detailed consideration of the intellect. In my view, such an understanding is necessary to adequately understand the emergence and nature of Reason.

Intelligence. What is intelligence? Intelligence is something we make judgements about with regard to the self and others. Spearman [p.5 1927] is one of the great pioneers in psychometrics, his interest being in the nature and measurement of intelligence. On the judgements we make, he has this to say:

> Judgements about intelligence.....are made everywhere and by everyone -- for the most part with much fluency and confidence. In degrees of it we habitually rate all the persons with whom we come into contact. Nothing else than such degrees do we mean when we call one man "clever", "bright", "sharp", or "brainy, whereas another is said to be "stupid", "dull", and so forth.

Perhaps by analogy with physical strength, endurance etc. we might be inclined to suppose that, equally, there are differences amongst agents with respect to

the powers of their minds, especially their intellect. For instance, in an article Kames [p.166 1799] in states: “He was weak in his intellects”. The implication is that the power of the intellect varies and that there are, roughly speaking, strong and weak ones. Even today our experience of the self and others -- through upbringing, school and work -- suggests that people differ in their intellectual power or intelligence. Simply, some people are smarter than others.

From a naturalistic point of view, it is generally agreed that intelligence depends on the evolving organ of intelligence; that is, the nervous system, especially the brain, mind or brain-mind. Comparing the evolution of hominid brains to other animals, Vernon [p.313 1983] says:

> Though intelligence is already present in the ability of lower species to sense and react to objects and to learn at a primitive level, it evolved with the enormous growth in size and complexity of the higher brain centers and the cortex. Mammals can generally adapt more readily and cope with more complex tasks than fish and insects; while monkeys and apes are more intelligent than other mammals, apart from man.

Thus, not only is there an appreciation that there are grades of intelligence within a species but also between species. Today, as in the past, we are inclined to speak of grades (or degrees) of intelligence.

But what is intelligence? “Intelligence”, which originally stood for understanding, derives from the latin *intelligentia* [p.535 Barnhart 1988] which appears to trace back to Cicero. Later, it appears in Chaucer’s [c.1395] translation of Boethius’ *De Consolatione Philosophiae*. Around 1475 it takes on “the sense of information or news”. Before the 20th century and the advent of intelligence tests and IQ, there was a well-accepted definition. According to Reber [pp.364-365 1989] that definition is as follows:

> [Intelligence is] the ability to profit from experience, which implies the ability to behave adaptively, to function successfully within particular environments.

This kind of understanding is generally attributed to Spencer [1895] who took an early ecological approach to mind and intelligence. He defined life as “the continuous adjustment of internal relations to external relations”. In man this adjustment is achieved through intelligence where in other animals it is achieved through instinct. Essentially, it is a psycho-biological feature and therefore is subject to development and evolution. This view is later echoed by Spearman [p.88 1927] who states:

> .....We may perhaps with profit come back eventually to such properties as “conscious adaptability to new situations,” or “capacity to learn,” or “the power of combination.” Phrases of this sort are especially promising when tightened up by means of restrictive clauses.

Today, the bones of this idea are given more flesh. Based on two symposia on the central features of intelligence, Sternberg [pp.700-01 v.2 2001] states that -- according to the experts of our time intelligence involves:

(1) adaptation in order to meet the demands of the environment effectively;
(2) elementary processes of perception and attention;
(3) higher-level processes of abstract reasoning, mental representation, problem-solving and decision-making;
(4) ability to learn; and
(5) effective behaviour in response to problem situations.

Quite rightly, he points out that the definition of both lay people and professionals tend to differ from the experts in emphasis. For instance, lay people emphasise social competency, philosophers emphasise critical and logical thinking and physicists emphasise mathematical skills and conceptual understanding of the regularities of Nature.

Generally, intelligence appears to be some gross mental functionality or “mental power” of the agent like human beings. However, Spencer’s intelligence-instinct distinction doesn’t seem to stand up to modern findings in ethology, the study of

animal behaviour. Some animals do show behaviour e.g. problem-solving which can be interpreted as intelligent; and the implication that instinct is not intelligence is dubious. Indeed, Piaget [p.366-367 1971] states:

> .....intelligence does inherit something from instinct although it rejects its method of [elaborative] programmed regulation in favour of constructive autoregulation. The part of instinct that is retained [is].....its source and.....learned or even experimental adjustments.

Here, intelligence is intellect. Piaget goes on to point out that this functional differentiation allows for "a new cognitive evolution". Thus, the suggestion that instinct is not intelligent belies the ecological success of animal species in their habitats. Furthermore, instincts can be elaborated and enhanced by learning and adaptation.

What exactly has intelligence? Is it the agent, mind or the intellect? In the first instance, language use suggests we attribute intelligence to an agent. For instance, we describe some people as "bright" or "smart" and others as "not so bright", "dumb" or "stupid". When we refer to the intelligence of an agent, we don't intuitively mean the intelligence of its stomach, liver, muscles, skin, skeleton etc, though they have their own response capabilities -- we are referring at least to the intelligence of its nervous system, brain or mind. Under the reasonable and plausible assumption that intelligence somehow belongs to or resides in the mind and agent's actions arise from the mind, we may refer to someone having a "brilliant mind", a "dull mind" etc. Hence, intelligence is attributed to an agent by virtue of the intelligence of its organ of intelligence whatever that might be. These are indirect attributions where agents and perhaps minds are concerned. But to truly have insight into intelligence, it is necessary to know what intelligence can be attributed to. Broadly, there are two positions as to what truly has intelligence. They are:

(1) Narrow Intelligence. Intelligence is a feature of some part of the agent or mind. Usually, the intellect is nominated as having intelligence.

(2) Wide intelligence. Intelligence is some global feature of the agent's mind as a whole. Any part of the mind only shows an aspect of that intelligence.

In both instances, it is attributed to an agent by virtue of whatever might be the "the organ of intelligence". What then is this organ? I shall critically examine each possibility in turn

First, consider narrow intelligence; that is, intelligence is some feature of some part of the agent. Originally, Spearman [p.28-29 1927] points out:

> .....Intelligence.....was only a grammatical variant of the "intellect"; the latter term was used to denote the permanent mental power whereas the former.....naturally meant the actual putting of this power into use.

The recognition of the faculties of mind i.e. the senses, memory, imagination, attention, speech and movement led to a "gross equivocality" which seemed "to ruin the concept of 'intelligence' and in consequence to bring the greatest trouble upon" our understanding of mind and mental testing. However, as Spearman points out, some have suggested that the features on which intelligence rests are these several faculties identified throughout the history of ideas. For Spearman [pp.2-3 1927] intelligence is fundamentally due to a person's "ability to 'cognise'" which can be treated separately from other aspects of the mind. He states:

> In general, a person's total cognitive ability may be regarded as an instrument or organ at the disposal of any of his conative [and affective] activities. It is this organ, then, that we are principally about....., and with especial reference to its variation of efficiency from one individual to another.

Essentially, Spearman suggests that intelligence is a feature of the intellect. What's more, its degree of intelligence is reliability indicated by a g (general) factor, which happens to be numerical/arithmetical ability.

Now consider wide intelligence; that is, intelligence is a feature of the whole agent. Pioneers in the testing of measurable intelligence such as Binet [and Simon 1905] and later Wechsler [1940; 1950] have "concluded that intelligence is a quality of the total person and not a separate component that can be measured by IQ tests in isolation" [p.770 v.2 Matarazzo and Denver 2001]. Some psychologists like Kantor [p.261 1920] consider intelligence to be a behaviour. They are doubtful about it being a capacity or ability. But Wesman [p.267 1968] offers this ontological insight: "we have all too often behaved as though intelligence is a physical substance..... We might better remember that it is no more to be reified than attributes like beauty, or speed, or honesty". I think it is safe to infer that, at the very least, it is an attribute of behaviour that belongs to the agent as a whole.

Literally, to say it is an agent which has intelligence is too wide. It is minds which possess intelligence; and agents have it in virtue of having minds. To say that it is the intellect of an agent's mind that has intelligence is too narrow. Still, Spearman's contrast of "total cognitive ability" at the disposal of "conative [and affective] activities" gives us a clue. Generally, we may say it is the informational or cognitive (in the wide sense) functionality of minds which has intelligence. Again, suggested by Spearman's commentary, an instrument metaphor might help to understand this. Intelligence is analogous to an instrument or resource. It serves the interests of the agent. And, like an instrument, it may be improved upon so that it may do a better job. This intelligence "instrument" of intelligence is not confined to the intellect but includes all those faculties at the service of an agent's interests be they innate or learned.

The Intellect. What is the intellect? Up to now, I've adequately settled two key points:

(1) Intelligence. It is a measurable attribute of mental abilities or cognitive capabilities in the *wide* sense.

(2) Cognition. There is a proper subclass of mental abilities that relate to cognition. They involve cognitive capabilities in the *narrow* sense.

By implication, a measure of (2) based on an understanding of (1) is cognitive intelligence (IQ_c). Essentially, this is confined to intellectual abilities. This understanding is more-or-less endorsed by Drever, Reber and others. From the perspective of psychology, Drever [p.141 1952, ed. 1968] defines "intellect" as

> Mind in its cognitive aspect, and particularly with reference to the higher thought processes.

By "aspect" he appears to mean mode or sector of the mind. Another account is due to Reber [p.379 1989]. He defines "intellect" as follows:

> Originally, the term "intellect" referred specifically to the rational thought functions of the human mind; today it is a generic term covering the cognitive processes as a whole.

His take on "rational" involves "the use of reason", "rightness or correctness according to reason", "higher mental functions", "sanity and lucidity" and points out that it is "primarily cognitive in nature as opposed to emotional". This focus on cognition (that is, thought and thinking generally) is endorsed by others and is consistent with past accounts of the intellect. I concur with this account as it captures the essence of the intellect and is essential to Reason as well.

What is the nature – especially the constituents and organisation -- of the intellect? One of the best known attempts to address these concerns is the model of "the structure of intellect" due to Guilford [1959; 1967] as shown in figure 3.1. Guilford's model is based on a content-act conception of the mind. Essentially, his model is a classification scheme of cognitive phenomena. He posits three factors as characterising intellect: content, operation and product. The contents are manipulated by operations resulting in structures called products. He uses these factors as names for three axis perpendicular to each other.

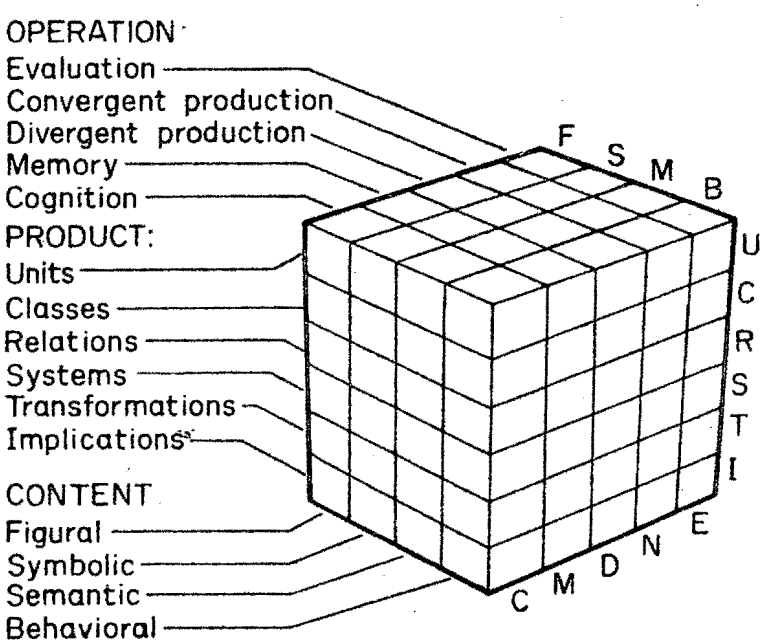

Figure 3.1 Guilford's "Structure of the Intellect" Model. This model relates content, operation (process) and product types in a 3-D matrix.

The result is a cube where each cell represents a class of problems associated with a certain contents-operations-products triad. Some of these cognitive units are the building-blocks of the intellect -- the cognitive units out of which complex schemata are built; this applies to both content and process. Again, I concur with this structuralist conception.

Guilford's attempt to model the intellect is a worthwhile endeavour; however, I'm not entirely convinced of the results of this endeavour as it currently stands. This is a rather contrived classification, guided by factor analysis, and taking a combinatorial approach to classifying factors. However, it is not entirely evident that all possible combinations make sense. At the very least, they have to obviously reflect the various abilities that we are aware of such as reasoning, problem-solving, decision-making, creativity, imagination etc. Guilford's model is so inclusive of the abilities of mind that it is tantamount to a classification scheme of intelligence. Again, we are confronted with the intelligence-intellect distinction; and distinguishing intellect from other faculties of the mind. On both accounts, there is still disagreement amongst cognitive psychologists. This is evident when we survey views expressed by cognitive psychologists in their better known texts. The text of Gleitman, Fridlund and Reisberg [5th ed. 1999] appears to take a wide view of cognition. They include the following mental functions: sensation, perception, attention, memory, thought and knowledge, language as well as learning. It is worth noting that attention is treated with perception; and that thought and knowledge includes problem-solving, reasoning (deductive and inductive), imagination and decision-making. Language is contrasted to images in perception and thought. Other texts take a narrow view of cognition. Even so, there is still disagreement as to what mental abilities belong under cognition. The text by Best [5th ed. 1999] excludes sensation. Sensory input is a starting-point for cognition in a causal chain which connects an agent with its environment. There is no mention of creativity and imagination, though he does consider "the organisation of knowledge". Another text by Solso [5th ed. 1998] includes mental images. Popplestone and Mc Pherson [p.303 1988] recognise the problem; and suggest that there is nonetheless general agreement as to what to include under the umbrella of

cognition. Cognition includes “such similar phenomena as abstracting, concept formation, creativity, decision-making, insight, judgement, planning, problem-solving, productive thinking, reasoning, and thinking”. Thus, it is by no means evident that Guilford’s cube of cross-classification captures cognitive types and reveals their true inter-relationships.

As with intelligence, I think an evolutionary ecological approach is more insightful in trying to understand the constituency and structure of intellect – not only types but also part-whole relationships. I start with the notion of a cognitive system. Under a content-act conception, such a system may be thought of as consisting of different calculi. A calculus is an algebra-like structure. Given this, the evolutionary seed of the intellect most likely was a very simple cognitive system. Expressing a similar view, Piaget [p.346 1971] in his *Biology & Knowledge* argues that the cognitive function is an extension of primitive cognitive-like processes. He states that

> .....cognitive mechanisms are extensions of the organic regulations from which they are derived, and....these mechanisms constitute specialized and differentiated organs of such regulations in their interactions with the external world.

Given these primitive beginnings, it is not entirely clear how the variety of cognitive functions e.g. reasoning, decision-making, problem-solving etc. differentiated from early functions and integrated with one another. This may only be revealed by an algebraic analysis of the elements, relations and operations of the calculi of cognition. From such an analysis may be determined various types, wholes and hierarchical relationships. On reflection, what is apparent is that some of these cognitive functions are crucial for the success of finite agency in the world. Gaps in our understanding are problems to be solved; choices appear in experience, options arise in thought and therefore require decisions to be made; and so on.

I think it is adequate that I take a general view of the intellect, which merely recognises important abilities for the task at hand. Thus, in the light of informed

models due to Vernon, Guilford, Burt etc. and the associated unsettled issues, I elect only to consider those general capabilities of the intellect that are relevant and significant for understanding Reason in the next section. Taking the human intellect as a reference-point, there are at least three general capabilities which seem important. Simply stated, they are:

(1) Cognition
(2) Reflexion
(3) Self--organisation

Fundamentally, the intellect is about cognition and self-organisation. Self-reflection, which includes cognitive reflexion is most likely a mode of the intellect. To appreciate this, it is necessary to critically examine each of these intelligent functions in turn.

The intellect is a system of cognitive functions. Two related questions then arise. One has to do with the constituents and the other with its structure. This is what Guilford and others have attempted to address. Though these issues remain unsettled, it is possible to highlight familiar cognitive abilities, especially those that arise in this inquiry concerning persuasion and knowledge. They are: ideas and creativity; values and judgement; reasons, inference and reasoning; choices and decision-making; and finally problems, solutions and problem-solving. There is some inter-relationships between them. For instance, creativity can be important to the others in producing new contents and processes like creative solutions to problems and strategic options for decision-making. Indeed, trying to make the right decision can be a problem in itself. Furthermore, the intellect is distinct from other faculties of the mind. A number of philosophers distinguish the intellect from the senses [Baldwin p.558 v.1 1901]. Indeed, In *Essay on the Intellectual Powers of Man*, Reid [1785] uses “intellect” as “some kind of antithesis of sensations”.

I don’t consider the reflective capability – traditionally referred to as self-reflection – as crucial to the intellect, though this might not be the case for

Reason. It is merely an operational mode of the intellect as a whole. However, it is important in defining certain classes of agents and their cognitive capabilities. Such capabilities can be distinguished by what the their contents refer to. This includes references to the self. Observing the behaviour of some animals e.g. dogs, cats, birds, dolphins etc. it can be inferred by analogy to ourselves that they have an awareness of their bodies in their relation to them. However, this is a partial self-relation. As experience attests, agents of the calibre of normal human beings have full reflection as they can not only think about themselves e.g. body, mind etc. but also think about their thoughts and thinking.

Finally, consider the notion of self-organisation, which originates with the study of neural nets. Of particular note is the pioneering work of Mc Culloch and Pitts [1943], Rosenblatt [1962], Kohonen [1977; 1984], Selfridge [1959] and others. A self-organising system is one that can re-configure itself in relation to prevailing conditions and retain that configuration. Essentially, such systems require the capabilities for learning (plasticity) and memory (retentivity). Here, “memory” is used in a wide sense such that it covers both declarative (content) and procedural (act) memories. Taking its goals into account, a self-organising system may adjust itself to become better suited to its environment. This is called adaptation; and designs for this, for better or worse, may originate in self-reflection. Both the experiences of the self’s own mind and the behaviour of others attests to the adaptive self-organising capabilities of agents.

Overall, the intellect is a self-organising cognitive system. In the cognitive architecture of an agent’s mind, it at least carries out a mediating role between perception and action. Noteworthy are the cognitive functions of problem-solving and decision-making in this respect. Clearly, some agents e.g. human beings intellectually conceptualise, think and reason about themselves. However, cognitive reflexion or self-reflection appears to be a mode of the intellect and may not be crucial to defining intellect.

3.1.2 Reason

Now I turn from the intellect to Reason. Whatever it is, the existence of Reason is a fact of experience, if only human experience. It is at least part of human nature and, depending on contingencies and the proclivities of the agent, Reason may participate in their thoughts, feelings and actions. In trying to understand Reason, it has often been contrasted with the intellect and intelligence of (other) animals -- the beasts or brutes. In his *Vegetable Mould*, Darwin [ii. 97 1881] discusses the intelligence of worms. He states:

> If worms have the power of acquiring some notion, however rude, of the shape of an object and their burrows, as seems to be the case they deserve to be called intelligent.

As they have intelligence, it is quite possible they have an intellect, even if it's a simple one. In his *Animal Life & Intelligence*, Morgan [ix. 372 1890] hints at a difference between having intellect as against having Reason. He puts it this way:

> I regard the bees in their cells.....as workers of keen perceptions and a high order of practical intelligence. But I do not.....believe that they reason upon the phenomena they deal with so cleverly. Intelligent they are; but not rational.

From this we may infer that they have intellect but not Reason. Throughout the centuries such a view has prompted sentiments like that expressed by Harris [Wks. (1841) p.325 1775] in his *Philosophical Arrangements*. He states:

> Of all the animals we see around us, man alone possesses the reasoning faculty.

Accepting this, Darwin goes even further. In his *The Descent of Man*, Darwin [I.ii 46 1871] states:

> Of all the faculties of the human mind it will, I presume, be admitted that Reason stands at the summit.

This echoes a view common in the Enlightenment to wit: Reason is the superior faculty of the mind. I shall now bring these insights together. Generally, non-human (higher) animals have intellect but not Reason. And, whatever Reason is, only man possesses it; and it is the superior, if not the supreme, faculty of the mind. Indeed, the idea of Reason as "the defining characterisitc of human beings (the human essence) remains powerful" [Belsey p.748 1995]. Of course, it is conceivable that there might be other entities in the Universe that have intellectual powers, including Reason, equal to or greater than our own. I have in mind extra-terrestrial intelligences (ETI's) or futuristic terrestrial machines or advanced living beings. Granted, all this is highly speculative but physically possible. Traditionally, Reason is closely associated with the intellect. At the very least, both involve thoughts and thinking. But what is the difference between them? And, how exactly are they related to one another? Here, I critically develop an understanding of Reason which enables answers to these questions.

What then is it about Reason that makes it stand out from intellect? I start with the language use of "reason" generally. What is meant by "reason"? On the meaning of "reason", Flew [p.300 1979] makes the following remark. "Reason" is "a word used in many, various, often vague senses, with complex and sometimes obscure connections one with another". In answering the aforesaid question and in response to Flew's comment, I hope to untangle the different intermingling threads of meaning. The OED [pp.288-290 XIII 1989] records the following accounts of "reason":

> A statement of some fact (real or alleged) employed as an argument to justify or condemn some act, prove or disprove some assertion, idea, or belief. .... [An] intellectual power or faculty....which is ordinarily employed in adapting thought or action to some end; [or] the guiding principle of the human mind in the process of thinking. .... [It involves] think[ing] in a connected, sensible, or logical manner; to employ the faculty of reason in forming conclusions (in general) or in a particular instance.

In sum, "reason" is used, depending on context, to refer to an argument, a faculty with good thoughts and thinking. All of these have the character of

rationality. They appear to be inter-dependent notions. The faculty of Reason, through good thoughts and thinking produces arguments and criticism. Such thoughts and thinking relate to reasons and reasoning. Furthermore, in contradistinction to reason it is necessary to look into other internal influences on actions; that is, the senses and the passions. As ordinary language shows, these notions are in good stead; therefore, a good understanding of reason ought to take them all into account. And I shall attempt to do so in one way or another.

Reasoner. First up, let's dispense with the reasoner as this is fairly straightforward and everything else can be conceptually associated with it. Simply, a reasoner is an agent. This is a notion having a heritage which goes back to Aristotle's claim that man is the "rational animal". But what kind? Simply, a reasoner is an agent who possesses Reason and through this apparently intellect-related system produces reasons (contents) by reasoning (process). Like intellect, it is embodied within the cognitive architecture of the mind of an agent who roughly has at least the intellectual capabilities of human beings.

Reason as an Intellectual System. As a thing in or of the mind, what is Reason? Clearly, its like intellect and indeed might well be a kind of intellect. Before dealing with the main theories on the nature of Reason, I wish to critically examine some of the things said about Reason as this will inform my criticism of such theories. There appear to be two proposals as to the nature of Reason. They are:

(1) Entity Theory. Reason is the inner self-aware intelligent essence of an entity or being that is causally connected to the nervous system (specifically, the brain) and through this resides in it. It is the inner self or "I".

(2) Faculty Theory. Reason is (at least) a self-aware intellectual faculty integrated within the cognitive architecture of mind of an agent.

Now I shall elaborate and critically examine each of these theories on the nature of Reason as an internal system.

First, I turn to entity theory. This seems to have its origin in Descartes notion of a conscious self-aware ego. Descartes [1641] view of the mind originates with Plato [c.427-347 BC]. The mind (also referred to as the soul or psyche) is the self-moving principle of Man. It was divided into three parts: an appetitive part which motivated him to seek pleasure; a spiritual part which motivated him to seek glory: and a rational part which wisely guided the inferior parts. The rational (aspect of the) mind was immortal. Descartes was inclined to include some of these parts in his account of the mind. The mind (or soul) is the conscious thinking self. In his *Discourse on Method* [AT VI 33; CSM I 127 1637], Descartes states that: "this "I" by which I am [is] what I am". Later, he develops this conception in his Meditations [AT VII 27, 28; CSM II 18,19 1641] wherein he asks:

> What am I then? I am in the strict sense only a thing that thinks (res cogitans), that is, I am a mind or intelligence, or intellect ,or reason..... What is that? A thing that doubts, understands, affirms, denies, is willing, is unwilling.....

Under the category of thought he includes volition and cognition (intellection). Also, he adds sensation and imagination but later withdraws them. This view of Reason as an inner self-reflective rational entity – or, simply, rational mind -- is metaphorically described by Churchill [iv. 1763] in the poem *The Ghost*. He states:

> Within the brain's most secret cells
> A certain lord chief justice dwells
> Of sovereign power, whom one and all,
> Within common voice, we reason call.

Flew [p.300 1979] critically discusses the entity notion of Reason. He states:

> .....Reason is contrasted with such hypostatized internal or external rivals as imagination, experience, passion, or faith, and [is].....too often [treated as having].....the power and province of some superperson.

By suggesting it is "hypostatized" -- sometimes used interchangeably with "reified" [Angeles p.130 1992] -- he is saying that an abstract name or idea is being erroneously treated as an object, system or -- in the case of Reason -- a living entity or being. Such a view is in keeping with a dominant naturalistic stance of modern science and its support base in philosophy. The mind, including Reason, depends on the body – in particular, the nervous system or brain – for its existence. Another difficulty with this view is the homunculus fallacy. The idea of an "little man" occupying a theatre of the mind leads to an infinite regress of inner observers. Given that such inner observers have never been found, it can only be a functional effect arising from self-reflective capabilities of the natural mind or reason.

Now I turn to faculty theory. According to Peters' [p.37 1967] historical lexicon, "dianoia" was used by Aristotle for "intellectual activity". He was also responsible for dividing up the human mind (or soul) into distinct functionalities which later became known as faculties [Leahey p.303 1999]. In his *Nicomachean Ethics*, Aristotle [384-322 BC] distinguishes two parts of the soul (or mind): there is logos (Reason) and pathos (the passions). Later, Avicenna [980-1037] attempted, along the lines of Galenic medicine, to relate brain regions with faculties. The classical notion of a faculty of Reason raises two concerns. One relates to the faculties of the mind; and the other, to the existence and nature of Reason itself. Consider the faculties of the mind. The idea of faculty is an old one going back to ancient times. However, it fell into disrepute probably because of the explosion of faculties along with phrenology which attempted to associating distinct regions of the head with underlying faculties. Still, Freud talked of ego and James of the "judicial intellect" as Reason. With the rise of the cognitive science movement in the middle to late 20th century, the faculty concept has had a revival. This is most probability due to the modularity hypothesis promoted by Fodor [1983] in *The Modularity of Mind*. Though some equate the two, a faculty may be thought of as a network of

functional modules e.g. intellect, self etc. Still, it is a contentious issues as to the cognitive architecture of the mind. What is clear from studies of the localisation of functions in the brain is that mental functions and faculties are not always localised but can be distributed across one or more brain regions.

Given this account of faculty, I focus on the existence and nature of the faculty of Reason. In philosophy, it has pride of place; however, in psychology things aren't so clear-cut. Reber [p.617 1985] states:

> Originally, reason was viewed as an integral mental faculty which functioned in a purely rational manner. This meaning is rarely intended in contemporary writings.

A common appreciation is to treat "reason" as roughly synonymous with "logical thought". On other accounts, it is "intellectual activity" [Chaplin p.385 1968; Eysenck p.124 v.3 1972; Corsini p.810 1999], "the faculty of rational thought" [Colman p.620 2003] or merely contrasted with the sensory capability or taken to be a opposed to intuition, instinct or emotion" [Eysenck p.124 v.3 1972]. All these theories seem to derive from psychology's historical origin in philosophy; and seem consistent with human experience. Furthermore, the notion of a rational faculty, residing in the cognitive architecture of an agent, as a localised or distributed functional module seems to be a reasonable and plausible possibility. In what follows, I attempt to develop this idea.

Reason as the Rational Faculty. As a psychological naturalist, I'm inclined to support faculty theory. But this only brings us one step closer to understanding Reason. What is the nature of this faculty of Reason? I think the answer to this question has been implicitly present in the discourse and writings of the past. The best examples are the speculations of Descartes [1641] on the mind and body; and Kant [1781] on what he calls "pure reason". Mind is a conscious self-aware ego which can exist separate from the body, in particular the brain. This notion is suppose to capture an inner "I" which can operate separately in both a substantial and functional sense. As a naturalist, I don't concur with the substance separability of the mind from the body. But an "inner I" -- in some

sense of the expression -- going about its business in the presence of other faculties and functions is particularly interesting; and I think a simpler naturalistic variant of this notion can make sense of Reason even in a natural setting.

Essentially what I propose is that Reason is a functionally semi-autonomous rational faculty based on the intellect. To be more precise, I propose this formal definition:

> Reason $=_{df}$ open empassioned reflexive rationally-principled semi-autonomous intellect.

I wish to elaborate on the details by drawing on what I previously said about intelligence and the intellect. What exactly are the main capabilities of Reason? Based on the prior definition, I propose that Reason has the following capabilities:

(1) Semi-autonomy intellect and cognition.
(2) Pro-rational passions.
(3) Rationally-principled regimentation.
(4) Reflexion.
(5) Self-organisation.

I shall now support my proposal by critically examining the aforesaid capabilities in turn.

First, intellect. There are two important capabilities to consider: functional semi-autonomy and cognition. Consider a functional semi-autonomy. Because of its rational interests, Reason can give direction in life. The “directive faculty of the soul” was known as *hçgmonikón* to the Stoics; and is “the rational faculty” according to Chrysippus [c.280-207 BC]. Furthermore, it is characterized as an “internal independent principle” by Marcus Aurelius [Peters p.78 1967]. Essentially, this capability to operate relatively independently of other functions

(including influences e.g. the passions) in the cognitive architecture of the mind is functional semi-autonomy. Now consider cognition. The constituents of Reason are considered by Belsey [p.748 1995] in his definition. He states that Reason is

> the general human 'faculty' or capacity for truth-seeking and problem-solving, differentiated from instinct, imagination, or faith in that its results are intellectually trustworthy -- even to the extent, ...[by some accounts], that reason is necessary and sufficient for arriving at knowledge.

By other accounts, the senses are sometimes included as well. Such a view is critically evaluated in the light of intelligence and the intellect. The intellect includes the cognitive capabilities of mind; and can be appreciated as constituting cognitive intelligence. It includes cognitive abilities like problem-solving, interpretation, decision-making, imagination etc. along with memory. Hume [1739] restricted Reason to mathematical and logical reason and having no role in empirical belief-formation, ethical concerns etc. However, science and mathematics, let alone everyday experiences, don't bear this out. Clearly, some of these cognitive functions e.g. imagination may result in creativity and even originality. Thus, the intellect and Reason can be sources of new ideas, principles, rules, values etc. Clearly, this contradicts Belsey's account.

Second, a pro-rational passion. At the very least, reason is an intellect. Without motivation it is merely a service to an agent's interests and instincts; in short, its passions. Hume [p.415 1739] said something like this:

> We speak not strictly and philosophically when we talk of the combat of passion and all of reason. Reason is, and ought only to be the slave of the passions, and can never pretend to any other office than to serve and obey them.

By analogy, Reason is an instrument or service to be used by the passions. For Hume, the passions include the motives behind action; and Reason is the understanding available to the passions. According to Flew [[p.300 1979], Hume merely recommends a "dramatized tautology". Hume's insight is open to interpretation. In my view, it hinges on what he exactly meant by being "a slave

to the passions". If taken literally, then Reason is merely a service to an agent's passions and otherwise remains idle. If taken figuratively, then Reason is impassioned by commitments to the primacy of Reason and its principles of rationality. In other words, a rational agent is passionate about the self and others conducting themselves according to Reason. This is to say that reason has its motivational roots embedded in the passions. If this is so, and impassioned Reason is in charge, then it doesn't seem logically fitting to say that Reason is "a slave of the passions". The hormic-hedonic (HH) infrastructure of mind, described in section 2.2.2 of the previous chapter, was helpful to understand how psycho-social influence and persuasion works; and it can also help to understand Reason. Simply, Reason has rational interests. Thus, when we allude to Reason versus the passions we really mean to say impassioned Reason versus the remaining passions not associated with the agent's interest in rationality. Thus, Reason at least includes intellect and a mode of the passions relating to commitments to Reason: these are the driving-forces of being rational in the world at large. This makes an agent's Reason an influence in mind and community. A truly committed rational agent influences others by appeals like reasons, arguments and evidence; and can only be influenced by such appeals as well.

Third, rationally-principled regimentation. It is all well-and-good to have Reason but it is nothing without rational ideas, values, rules and principles to guide it. Such things give character to Reason. They guide Reason in regulating an agent's conduct; that is, its thoughts, feelings and actions in life. Some possible guiding principles are critically discussed in the next section.

Fourth, reflexion. Reflexion involves self-reference and self-applicability. It is the capability of an agent to think and reason about itself. Hence, Reason has object- and meta-subsystems. Agents with Reason can cognize about the self and its own Reason. This is suggested by John Donne [No.57 1628], the poet, in one of his *Sermons*. Therein he states:

> The difference between the Reason of man and the Instinct of the beast is this, that the beast but know, but the man knows that he knows.

Clearly, this is an account of self-knowledge. Locke [1690] offers this wider appreciation. He states that a rational agent is

> a thinking, intelligent being that has reason and reflection and can consider itself as itself.

He uses “reflection” to mean observing the operation of one’s mind. Sometimes “reflection” is also used to mean deliberation of which one kind is to deliberate on one’s own mind . With this capability for self reflection i.e. cognitive reflexion it is possible for an agent to rationally evaluate itself and reorganize itself, in particular its Reason or mind.

Fifth and last, self-organisation. Self-organisation involves the capabilities of memory (retention) and learning (plasticity). This allows for the possibility of intellectual development and adaptation to the world at large. This inherent capability may be exploited by the self’s Reason through self-reflection in a manner previously discussed.

Overall, when compared with intellect, Reason conceptually inherits capabilities (1), (4) and (5); however, it is capabilities (2) and (3) which distinguish Reason from intellect in the mind of an agent.

Reasons and Reasoning. I think it is obvious that Reason, reason and reasoning are closely related to one another. Linguistic form and language use suggests that this is the case. But exactly how are they distinguished and related to each other? The content-act conception can give us immediate insight: a reason (content) is produced by reasoning (process) within the system of Reason. Given this, it is possible to distinguish a wide and narrow sense to “reason” and “reasoning”. They are:

(1) Wide reason/ing. Reason and reasoning are the thoughts and thinking of Reason. A reason is simply a rational thought, or train of such thoughts, produced by rational thinking that includes reasoning (in the sense of inferring).

(2) Narrow reason/ing. There is thought and thinking in Reason, given that it is a kind of intellect. But reason and reasoning are not strictly identified with them. They are reserved for a proper sub-type that has a logical character.

Both senses *prima facie* seem to be reasonable and plausible views. I shall critically examine each alternative.

First, consider the wide notion of reason/ing. Such a position is consistent with Reason as a kind of intellect. Clearly, intellect covers a variety of thoughts and thinking. And correspondingly, Reason covers a variety of rational thoughts and thinking called reasons and reasoning. One kind is logical reasons and reasoning, though in language use this is shortened to “reasons and reasoning”. Such a traditional account is given by Blackburn [pp.320-321 1994] who says

> Any process of drawing a conclusion from a set of premises may be called a process of reasoning. ..... Evidently such processes may be good or bad: if they are good, the premises support [, materially imply] or even entail the conclusion drawn; if they are bad, the premises offer no support to the conclusion. Formal Logic studies the cases in which conclusions are validly drawn from premises. But little human reasoning is overtly of the form Logicians identify. Partly, we are concerned to draw conclusions that “go beyond” our premises, in the way that conclusions of logically valid arguments do not.

So far, this is fairly convincing to me. But what about non-logical (not illogical) reasons and reasoning? Amongst them is creativity and imagination. Creativity is sometimes characterised as having a combinatorial character. Creative thoughts -- including those which may turn out to be original -- involve combining pre-existing ideas into new ones. Such an intellectual process is not necessarily a logical “movement of thought” to use an expression of Guttenplan [1996]. Of course, one can reason by analogy and come up with a new idea --

but, again, based on previous ones. Clearly, as creativity and imagination can involve non-logical intellection and Reason is a kind of intellect, then Reason involves more than logical thoughts and thinking. The idea of creative thoughts and thinking being reasons and reasoning intuitively seems rather unconvincing. But may be that's due to the familiarity with common language use regarding these terms.

Now consider the narrow notion of reason. The reason for this alternative is an historical one. There has been and still is a linguistic preference for the narrow sense over the wide one. Many philosophers, I'm sure, will concur with this observation. Traditionally, they recognise "three categories of reason" [Flew p.300 1979]. They are:

(1) Evidencing. A reason "for believing p is an item of evidence showing or tending to show that p is true".
(2) Motivating. A reason "for doing something is a possible motive for that action".
(3) Causally necessitating. A reason for why an event or condition obtains is the causes which necessitate them.

It is naturalistically arguable that (1) and (2) are psychobiological sub-types of (3). And what is also consistent with this is what I say in my discussion of the reason-argument distinction in a later chapter. What makes reason distinct from other appeals used in persuasion is its inferential structure. As Logicians would say, a reason (or argument) has a logical form.

Overall , a convincing case can be made for each alternative. So, is there a way of choosing between them? I think the case for the narrow notion has the weight of traditional language use on its side. This would be difficult to change. Besides, such a mission is not that important. This does not necessarily negate the distinction of the wide notion. Hence, I propose there is rational thought/thinking in Reason; and a proper sub-type is logical thought/thinking which is also called reason/reasoning.

3.2 Rationality

Typically, agents that have Reason and conduct themselves accordingly are described as being rational; and possessing the attribute of rationality. Indeed, it describes a way of being in the world. Here, I critically examine what is rationality entails. It is not enough just to have Reason, a rational mind-view and associated rational values and guiding principles are necessary to guide thought, feeling and action. One strong rational standpoint, which is endorsed here, is evidence-based critical rationalism

3.2.1 Reason and Codes of Conduct

What is rationality? And, what is it to be rational? The OED [p.220 XIII 1989] defines “rationality” as follows:

> The quality of possessing Reason; the power of being able to exercise one” reason. ..... The fact of being based on, or agreeable to, Reason. ..... a rational or reasonable view, practice, etc. ..... The tendency to regard everything from a purely rational point of view.

Broadly speaking, in contrast to this is irrationality. The OED [pp.89-90 VIII 1989] defines “irrationality” as follows:

> The quality of being devoid of reason. ..... The quality of not being guided by, or not being in accordance with, reason; absurdity of thought or action. ..... An irrational thing, action, or thought; an absurdity.

Elsewhere, non-rationality is deemed to be “not rational” [OED p.500 X 1989]. Obviously, these definitions conceptually parallel one another in opposition. However, there is more to note. For rationality, it is required that the agent possesses the faculty of Reason and has “the power.....to exercise” it whereas for irrationality it is unclear if not ambiguous. Not having the faculty of Reason – though not necessarily excluding intellect as the prior section 3.1.2 suggests – is irrationality or perhaps non-rationality. What makes this unclear if not ambiguous is the possibility of having the capability of Reason but leaving it

dormant and undeveloped in the mind. Normally, these distinctions would be considered under cognitive style, which is not critically examined at this time. Suffice it to say, irrationality could be viewed as having a dormant Reason while non-rationality is being without the faculty of Reason. Another aspect to note is that various things can be described as a rational. Blackburn [pp.319 1994] concurs with this. "Rational" can be used to characterise a number of things: ".....behaviour, beliefs, arguments, policies and other exercises of the.....mind". This is not hard to appreciate. Everyday language use appears to endorse this. Rationality is a feature attributable to: agents (including groups), minds, faculty (intellect), thoughts and actions (conduct), ideas, values and so on. As it is applicable to various aspects of the agency I'm inclined to suggest that rationality actually characterizes a way of agency in the world. Having and developing the faculty of Reason, exercising it in thought, feeling and action permeates all aspects of agency; that is, having the attribute of rationality is simply existing in a rational way.

As previously indicated, an interesting situation is where the agent has Reason and can freely choose to abide by the dictates of (their own) Reason or otherwise. Here, free choice is the Humean sense; that is, the agent is free of influences (or forces) in making a choice. The dilemma is eloquently expressed in the play *Hamlet* by Shakespeare [Act 4. Sc 4 1604-5]. Here, one of the characters says:

> Sure, he that made us with such large discourse,
> Looking before and after, gave us not
> That capability and god-like Reason,
> To fust in us unused.

That choice has to do with the attitude an agent takes to the self's own Reason and, in the course of action, the Reasons of others. How ought I be? Should I be governed by Reason or otherwise? Broadly, there are two possible answers to this question. They are: general rationalism or irrationalism. These stances are existential orientations or ways of being. They are named as such to

distinguish them from specific versions. Now I wish to critically elaborate and discuss each of the aforesaid positions.

First, consider general rationalism. What is it to take a general rationalist stance? Two accounts come to light. One is by Doniela (via Sparkes) and the other by Flew. As Sparkes [p.196 1991] points out, “rationalism” is a term readily applied to a number of positions. As such it has many senses. One which is philosophically interesting is given by Doniela [p.12 1984] who defines it as follows:

> What is the central core of philosophical rationalism? Very briefly, it consists of two claims. First, human cognitive powers are said to consist of two sources or faculties: reason as thinking or intuition, and the senses as they are involved in the perception of everyday visible, audible, touchable and so on objects. Secondly, rationalism also claims that reason as a type of cognition is far superior to the senses. This claim of reason's superiority has been responsible, historically, for the conflict between rationalism on the one hand and empiricism on the other. Empiricism ... rejected the rationalist claim by asserting that all knowledge comes from sense experience.

Essentially, it appears that the concern is with the status of the faculty of Reason as a type of cognition. On this point, we may distinguish reason-based cognition and sense-based cognition. It is alleged that reason-based cognition is the superior one. Flew [pp.298-99 1979] recognises a wide and narrow sense of “rationalism”. The wide sense is defined as follows:

> Generally, [rationalism is] a commitment to Reason as opposed to faith, prejudice, habit, or any other source of convictions considered to be irrational.

The popular sense is associated with this one. It is “the rejection of religious belief as being without rational foundation”. This is not correct given the Five Ways of Aquinas which are rational appeals i.e. reasons or arguments for the existence of God – which is, of course, a religious belief. According to Flew, the narrow sense is associated with the position of a group of Philosophers of the

17th and 18th centuries regarding the nature and sources of knowledge. The representatives ones are Descartes, Spinoza, and Leibniz. Their claims are:

(1) "It is possible to obtain by Reason alone a knowledge of the nature of what exists";
(2) "Knowledge forms a single system";
(3) "Knowledge is deductive in nature"; and
(4) "Everything is explicable; that is, everything can in principle be brought under the single system".

Sometimes this is confined to (2) and (4) in the case of Sartre but that is not typical of the position. Clearly, Doniela and Flew organise these ideas differently. It is worth noting that, like Flew and Sparkes, the OED [Shorter p.2470 v.2 2002] recognises a number of accounts of rationalism. They include:

1. The principle or practice of using reasoning and calculation as a basis for analysis, a course of action, etc. (General)
2. The practice of treating Reason as the ultimate authority in religion. Also, the practice of explaining supernatural or miraculous events on a rational basis. (Theology)
3. The doctrine or belief that Reason should be the only guiding principle in life, obviating the need for reliance or adherence to any form of religious belief. (Philosophy of Life)
4. The doctrine or theory that Reason rather than sense-Experience is the foundation of certainty in knowledge. Here, it is opposed by empiricism, sensationalism, etc. (Epistemology, the Philosophy of Knowledge)

Likewise, the OED utilises a generic-specific dichotomy. I think this is the way to go as it coheres with the prior account of rationality and what it is to be rational. Another rendition recognises the importance of (intellectual) creativity and sense experiences esp. observation as sources of information. Such a rationalist upholds that the only legitimate beliefs are those based on reason and experience. A case in point is the critical rationalism of Popper.

Now I focus on general rationalism proper. Cautious as to what to include under Reason, Markie [pp.740-41 2000] offers this account of the original and common understanding of rationalism – the so-called rationalist spirit. He states:

> .....Reason [is] our intellectual abilities in general, including sense experiences. .....When they refer to the rationalist spirit of the period..... Scholars of the Enlightenment generally had in mind something like.....a general confidence in the powers of the human intellect, in opposition to faith and blind acceptance of institutional authority..... To employ Reason is to [at least] use our individual intellectual abilities to seek evidence for or against potential beliefs. To fail to employ Reason is to form beliefs on the basis of such non-rational processes as blind faith, guessing or unthinking obedience to institutional authority.

Though I don't think Mackie intends this, it's definitionally not correct to confine the use of Reason to beliefs. Agents make commitments which at least include beliefs let alone values, goals, rules, etc. Simply, Reason has wide applicability. Mautner [p.356 1996] concurs, stating that rationalism is "in general, a theory or practice which claims to be based on rational principles" where "rational" pertains "to the faculty of reason. ..... Depending on the context, the implied contrast may be with religious revelation, ordinary sensory experience, emotion etc." In sum, this is what it means to uphold general rationalism.

Now consider general irrationalism. What is it to take a general irrationalist stance? In a clear-and-simple contrast, the OED [Shorter p.1425 v.1 2002] defines irrationalism" as "a system of belief or action that disregards or contradicts rational principles. Mautner [p.215 1996] gives the following account of "irrationalism". He states:

> [The] rejection of Reason. ..... Many irrationalist doctrines do not actually reject the use of reason entirely but assign to reason a reduced, subordinate role. Instead, unreflective intuition, instinctive feeling and spontaneity are extolled, and the controlling influence of factual knowledge and moral principles is scorned.

Irrationalists uphold that the activity of agents is not always based on Reason. This is supported by Marx (1818-83), Freud (1856-1939). Others uphold that agents should not be guided by Reason; this is supported by Kierkegaard

(1813-55) and Nietzsche (1844-1900). Those who take an irrationalist attitude to Reason are apparently confronted with a dilemma. This has to do with its justification. Why should one accept it? They can resort to persuasion by using appeals other than to Reason. If they resort to appeals to Reason -- that is, to give reasons or arguments -- then they contradict themselves. However, as Mautner points out, some don't reject Reason outright. To allow themselves the exception to use reasons to (only) justify themselves seems a contrivance and an outright rationalisation. Perhaps it is then better to say that they are availing themselves of the intellect – at the service of their passions – rather than using Reason proper. After all, they disown the intellective faculty potential for Reason.

There is something worth noting in all this. So far, I have said that "being rational" is for an agent to be regulated by Reason or its conduct accords with Reason; otherwise, an agent is "being irrational". Suggestively, regulation implies rules and regulations whereas accordance implies agreeing with conditions (criteria). We may encapsulate both in the notions of principle, policy or the like. Thus, to complete the picture, it is necessary to at least consider two things:

(1) the principles of ir/rationality
(2) the cognitive styles arising from the stance of (1).

Both are necessary because there is bound to be a difference of opinion in a community over the nature and worth of Reason.

3.2.2 Concepts and Principles

So far it has been established that to be rational is to conduct oneself according to Reason; and that to do so upholds the position of general rationalism. Clearly, it is necessary to establish a basis by which to operate. This concern with the details of rationality – as a basis for Reason – and is raised by Hollis

[pp.516-17 1983]. He starts by wondering what it is for thought to be rational. He states:

> Rational thought is usually construed as thought which confirms to a canon of deliberation. It must at least be coherent, expressive and self-critical. ..... Only part of this canon is clear, namely the requirement of deductive and inductive reasoning (and even they can be disputed). For the rest, an informal, quasi-forensic notion of what counts as defensible belief leaves a good deal of latitude. Failure to formalize the canon, at least in detail, may suggest that thought is rational only relative to rules....

Here, Hollis recognises that, for thought at least, there have to be some rational guidelines. Careful consideration is one but there remains much latitude as to what those guidelines are. He then makes this warning:

> Failure to formalise the canon, at least in detail, may suggest that thought is rational only relative to rules which vary with place and time. Philosophically, this raises.....[the] issue: ..... Are there universal rules of rational judgement? On the one hand, clear and incisive accounts of the rules of Logic, probability and statistics are on offer; on the other, it is plain that these fields have a long changing and unfinished history and not necessarily one of advance toward a definitive account.

Without clear-and-distinct canons of Reason – a requirement for rational absolutism – we are left to the vagaries of rational relativism.

Beyond the bare recognition that certain minds have the free-thinking potential for Reason, how does Reason itself establish its principles? Quine captures this malaise in his account of philosophy and science wherein Reason is traditionally taken as important if not fundamental to their operation. In his *Ontological Relativity & Other Essays*, Quine [p.126 1969] states:

> .....I see Philosophy not as an *a priori* propaedeutics or groundwork for Science, but as continuous with Science. I see Philosophy and Science as in the same boat -- a boat which.....we can rebuild only at sea while staying afloat in it.

Given that there is no obvious, self-evident or given foundation then perhaps good working principles of rationality have to be discovered or invented by trial-

and-error and then subjected to the tests of experience. Perhaps our only guide is rational pragmatism; that is, what works and leads (more often than not) to success in thought, feeling and action. At the very least, this outlook gives us a clue as to ways by which Reason may establish itself in the cognitive architecture of an agent. There are some possibilities that anyone, who reflects on their own life experiences, can arrive at. They are:

(1) Innate propensity. There is an innate bias in favour of Reason or the passions.
(2) Tradition. Their immediate cultural environ tend to tacitly promote and endorse its conformity.
(3) Imitation. Others are models to be imitated due to their success or for other reasons.
(4) Trial-and-error learning. By chance, opportunities arise to demonstrate the benefits of one's Reason.

At the very least these precursors seem to be reasonable and plausible ones. It may be fortuitous but likely that an opportunity arises where Reason is used by the agent to deal with a problem or settle an issue. This may be a sufficient causal basis for the agent to take a positive attitude to Reason. What this suggests is that operating principles of Reason have pragmatically taken hold by fortuitous choices or trial-and-error. Once Reason has emerged, Reason itself has to determine for itself what it is for Reason to conduct itself rationally; in short, Reason has to specify and establish its own principles.

The tradition of Reason has been underway for centuries, one of its high points being the Enlightenment. Though productive to a modest extent, it appears to me there is a common ground, though it is not easily and immediately stated. Clues to this common ground can be found in discourse; and, reasonable and plausible attempts to specify it. This endeavour is recognised by Bernard [pp.772-73 1995], who identified three general attempts to define rationality. They are:

(1) Maximal Efficiency. ".....Acting rationally simply means acting in a way that is maximally efficient in achieving one's goal."
(2) Universalizable Principle. ".....To act rationally is to act on universalizable principles, so that what is a reason for one person must be a reason for everyone".
(3) Objective Standard. It is a rational act.....in accordance with one's own system of goals, as long as these goals meet some minimal objective standard.....".

In Angeles' [p.252 1992] account, he identifies two broad requirements. For an agent to be "rational" it intends to be

(1) "in conformity with Reason"; and therefore
(2) "adhering to qualities of thought such as consistency, coherence, simplicity, abstractness, completeness, order, or logical structure."

It is possible to infer from this account that to be rational is to have Reason and to operate according to rules and regulations which have rational worth. Of course, it is debatable as to what those rules and regulations are for a given agent, community or society and what they ought to be. Essentially, those rules and regulations constitute a value system for Reason or a rational code of conduct *sui generis*. Blackburn [p.319 1994] offers an account of rationality based on intellectual virtues. He states:

> To accept something as rational is to accept it as making sense, as appropriate, or required, or in accordance with some as aiming at truth or aiming at the good.

If Blackburn's criteria are not acceptable in some or all respects, it is at least possible to glean from this that rationality is about conformity to operating principles which are in good standing with Reason.

At the very least, it may be supposed that an agent is rational if it lets its Reason "have its way". Beyond that, operating principles are required that enable a rational code of conduct to be specified. Here, conduct covers the activities of

an agent, which includes thinking, feeling and acting in the world. What then are these principles? A critical study of the principles of rationality would have to be extensive; and therefore can't be fully addressed at this time. However, what is necessary to attend to the concerns of this philosophical inquiry can be covered by evidence-based critical rationalism, which constitutes a rational way of agency in the world. Earlier views can be found in the works of Mill, Peirce, Dewey and others. Though more general in character, it is in sympathy with Popper's stance of critical rationalism in the philosophy of science. Essentially, it is encapsulated by a maxim of Peirce [p.298 Jan. 1901]. Agents ought to be guided by the following maxim:

> A man.....may be determined to do nothing not pronounced reasonable, either by his own cogitations (rationalism), or by public discussion (dialecticism), or by crucial experiment [(empirical evidentialism)].

This pronouncement seems to capture the philosophical essence of rational conduct in a world that includes mind, community and Nature – a triad that is at the conceptual core of Mill's and Peirce's philosophy. Using the aforesaid maxim as a guide, rational concepts and principles relevant to this philosophical account of opinions and claims are identified and discussed briefly for later reference.

First, there is rationalism. An agent or community has to conduct itself according to accepted principles of Reason. There are a few prominent principles that are relevant and significant to this philosophical inquiry that I briefly review now. One principle is (rational) sophrosynism, which is central to rational conduct. The importance of self-discipline goes back to Isocrates who, along with Aristotle, was one of the early teachers and practitioners of rhetoric. Through his discourses, Isocrates promoted the Greek ideals of freedom, autonomy and the supreme ideal (or virtue) of *sophrosyne* [Corbett pp.537-538 1965] which roughly means "self-control". Synonyms include: self-governance, self-regulation etc. Without this at least, there is no command of oneself. The circumstance of self-discipline is aptly characterised by Plato [Cattell p.2 1971]. He compared the intellect (or Reason) to a charioteer guiding the powerful

horses of the passions and other internal influences. He gave it both the power of perception and the power of control [or will]; and introduced the term “nous” for this reasoning power”. Another principle is objectivism. A sophisticated but simple account of the subjective-objective distinction is given by Nagel [1986] in *The View From Nowhere*. Here, he is concerned with knowledge of conscious experiences. However, what he says about the distinction can apply generally. Nagel suggests that the subjective-objective distinction is not one-or-the-other but a matter of degree. At one end of the scale is pure subjectivity and at the other is pure objectivity. Between the two extremes, starting at the subjective end, are grades which involve less and less dependence on subjective factors of the agent. This gives us a way of becoming objective. By successively identifying subjective factors and constraining them, an agent may become increasingly objective. Ways to achieve this include: disinterestedness, impartiality, public accessibility and scrutiny, common language and standards, the use of instruments etc. Another principle is dialectical logicism. Historically, the rational requirement of being logical has been associated with the so-called “laws of thought”. Originally, they go back to Plato and Aristotle but are later given redress by Leibniz [1714] in his *Monadology*. There are four well-known laws: law of identity, law of non-contradiction, the law of the excluded middle and the principle of sufficient reason. The laws constitute a rhetorical-logical requirement of giving reasons and comply with some well-accepted system of logic. And, the dialectical-logical requirement is presenting sufficient reasons as to convince and cause a conviction in the face of alternative opposing views. The last two principles are fallibilism and revisionism. A general fallibilism, appropriate for Reason, derives from Peircean anti-Cartesian sentiments [Peirce CP. Bk.1 Ch.iii v.1 Para.61, 70 1911-1958] regarding beliefs and knowledge. This view recognises that a finite agent, including its Reason, is not infallible; they make mistakes, get it wrong on occasion. A rational response to this existential condition is a tolerance and openness to new ideas, including a preparedness to change. Such a stance is a moderate progressive revisionism that works as a self-correcting process. Clearly, critical discussion or debate can be a useful and productive avenue for change. Taken together, the several aforesaid principles constitute objective fallible critical rationality. This small

schema of principles is crucial to specifying a rational code of conduct. These concepts and principles are important to this philosophical inquiry; and are not intended to be comprehensive and complete.

Second, there is dialecticism, a "dialectical philosophy or practice" [OED p.600 IV 1989], which is concerned with rational disputation. Any disagreement (i.e. difference of opinion) over an issue is settled through critical discussion or debate in the discourse of mind or community. Underlying critical discussion or debate is opposition and persuasion. Peirce, including myself, consider both mind and community to be arenas of dispute. I don't critically discuss this view at this time. Suffice it to say that an agent can play the role of proponent, opponent and adjudicator within the bounds of its own mind. The core concepts and principles were established in chapter 1 and are further developed in chapters 2, 3 and especially 4.

Third and last, there is empirical evidentialism. Information used in discourse is backed up by empirical evidence wherever possible. As critically discussed in section 5.3, "evidence" is an ambiguous term. It is used for both reasons and the things referred to in reasons. Here, evidence e.g. testimony, documents, experimental results etc. are not reasons but the things referred to in reason and argumentation. This outlook is in keeping with the recent move toward robust evidence-based decision-making (EBDM) in professions. The movement began with the evidence-based medicine (EBM) movement due to a working group of clinical epidemiologists at McMaster University in Hamilton, Ontario in 1992 [EBM Working Group 1992].

3.3 Reason, Action and Discourse

In *Metaphors We Live By*, Lakoff and Johnson [pp.4-5 1980] explore how metaphors not only structure what we do but also how we understand what we do. With regard to critical discussion or debate discourse, either a game or jurisprudential metaphor has been used as a conceptual guide throughout the history of ideas.

In modern times, there are two philosophical approaches to understanding rational action in discourse, especially those involving debate. Both arise from the aforesaid metaphors. They are:

(1) Game theory. This discipline is a division of decision theory. It is based on a game metaphor of agent interaction.
(2) Forensics. This discipline is a division of, if not the best approach to, rational dialectics. Is based on a jurisprudential metaphor of agent interaction.

Discipline (2) is comparatively more developed to deal with critical discussion or debate in discourse than discipline (1), having its origin in the works of Aristotle. Still, both metaphors have a long history as will become apparent in due course. Both seem to be robust theoretical frameworks. But do two rational approaches to discourse (and dispute) presents a dilemma? Here, I critically examine these metaphors and the conceptual schemes that arise from their application. At this time, there is a stronger emphasis on forensics over game theory due to its immediate relevance and significance to critical discussion or debate.

3.3.1. Debates and the Game Metaphor

One philosophical approach to understanding debates in discourse uses a game metaphor. The game metaphor is based on the similarity between games and social activities in life. This metaphor seems to be quite old. For instance, in his book on Plato, Jowell [Ch.V p.12 1875] notes: “the discourse of the three old men is described by themselves as an old man’s game of play”. As Billig [p.40 1987] points out, the likening of debate to a game or fight can be founded in Quintilian’s [XI, I 20 c.35-100BC] *Institutio Oratoria* where he describes the strategic moves in debate in terms of the moves in a fight; and in Seneca’s [Pref. Iv. 1-41AD] *Controversiae* where he refers to gladiatorial contests. They also occur in later works such as the *Rubáiyát of Omar Khayyám* [Verse XLIX c.1048-1122; ed. Fitzgerald 1859], George Eliot’s [1866] story *Felix Holt* and in *Mathematical Psychics* by Edgeworth [1881].

The insight gained by using a game metaphor inspired the game theory (GT) of von Neumann and Morgenstern [1944] as originally develop in their *Theory of Games & Economic Behaviour*. The context for considering thoughts and feelings along with actions is action theory. Where there is a focus on rationality in relation to preferences, choices and decisions then the study is called decision theory (DT). This involves agents acting in relation to the events of the world. Generally, the world includes Nature and other agents. When restricted to the inter-play of agents or groups of them, the study is called game theory (GT). What is central to DT and therefore GT is decision-making. Morgenstern [p.63 v.6 1968] describes it this way:

> When a social situation is viewed as a game, the rules are given by the physical and legal environment within which an individual's actions may take place. The concrete occasion of a game is called a play, which is described by specifying out of possible, allowable moves, the sequence of choices actually made by the players or participants. ..... The players may act singly, or, if the rules of the game permit it and if it is advantageous, they may form coalitions.

In their *Games & Decisions*, Luce and Raiffa [p.10 1957] mention conflict as an aspect of the notion of game. They state: "Game[s involve].....situations of conflict amongst several people in which two principle modes of resolution are collusion and conciliation". If games are fundamentally conflicts, then we may wonder where disputes fit in and what mode of resolution applies to them.

As critically discussed in chapter 1, a dispute is a conflict arising from a difference of opinion with a view to conflict resolution. Can conflicts, especially disputes like critical discussion or debate, be treated as games? Both Schelling [1958] and Kaln [1965] point to the inadequacy of game-theoretic models in dealing with certain real-life conflicts, in particular international conflicts. Schelling [p.3 1963] characterizes conflict as follows:

> Among diverse theories of conflict - corresponding to the diverse meanings of the word "conflict" - a main dividing line is between those that treat conflict as a pathological state and seek its causes and treatment, and those that take conflict for granted and study the behaviour associated with it. Among the latter here is a further division

> between those that examine the participants in a conflict in all their complexity - with regard to both "rational" and "irrational" behaviour, conscious and unconscious, and to motivations as well as to calculations - and those that focus on the more rational, conscious, artful kind of behaviour. Crudely speaking, the latter treat conflict as a kind of contest, in which the participants are trying to "win." A study of conscious, intelligent, sophisticated conflict behaviour - of successful behavior is like a search for rules of "correct" behaviour in a contest-winning sense.

The notion of a conflict based on contest and winning is appropriate to disputes in discourse, as chapter 1 and 4 show. Elsewhere, the general question is taken up by Rapoport [pp.2,42 1970]. He points out that if this is possible, GT would treat “conflict theory as a branch of the theory of rational decision”. As the theory currently stands, it has “limited relevance to the behaviour of real players” as it is primarily concerned with rationally conducted conflicts”; however, it can “put them in an illuminating perspective”. This doesn’t necessarily dismiss the possibility that a future GT will be powerful enough to deal with real-life dispute in discourse.

Still, there have been nascent attempts to consider dialogues, conversations and disputes as games. Work has been done by Hintikka [1968; 1981] on language games. His focus was on information-seeking dialogues which use Q&A. An example is a detective interrogating a witness or suspect about a crime. Another one is a lawyer cross-examining a witness in the stand. Essentially, he is interested in dialogical games of inquiry. Information-seeking games are merely an aspect of more sophisticated game forms of dispute. Typically, disputes involving two parties may be described, using the words of Rapoport [p.37 1970], as “bipolarized ones, involving two opponents with interests diametrically opposed”. Overall, I think that disputes in discourse are *prima facie* games in some sense, especially as defined for real-life games. However, it is worth noting that GT started as an abstract approach to games; and slowly appears to be working its way from an idealistic to a more realistic game-theoretic outlook of social activity generally. The work of Nash and more recently Schelling who won the 2005 Nobel Prize for his work on conflict give credence to this. His Centre for Rationality and Interactive Decision-making suggests a view appropriate to dispute in discourse. Even today, GT is suppose

to be our best account of the inter-play of rational agents. Presumably, this includes conversational games like disputes (discussion and debate) in discourse. But is it up to the challenge? Apparently not. However, there are interesting conceptual developments which suggest that it might be "up to the game" in the future.

3.3.2 Debates and the Jurisprudential Metaphor

Another philosophical approach to understanding disputes – specifically, critical discussion or debate – in discourse involves using a jurisprudential metaphor as a guide. The model that arises from jurisprudential insights is not new. This is well-recognised by scholars of ancient works, some of whom are quoted here. In his historical study of Aristotle's *Rhetoric*, Brandes [p.178 1989] clearly shows that Aristotle was preoccupied with forensic oratory. Though it is not entirely clear, for lack of evidence, it may be due to the students he serviced as an educator. However, it is evident that

> .....the rules and procedures for forensic oratory were more developed in Greece as were the methodologies for demonstrative and epideictic [or pretentious] speaking. That is true today. In looking for precepts, therefore, Aristotle would have been likely to turn to law.

The text of the *Rhetoric* clearly suggests a more encompassing interest in persuasion. However, there are difficulties in translation which Brandes [p.182 1989] proposes can be overcome if we keep in mind the following:

> Although Aristotle protested that he wanted to expand his treatise to include not only forensic speaking but also deliberative and epideictic speaking, his treatise continued to apply well-developed legal concepts to political and occasional speaking. ..... [Indeed,] Aristotle leaned heavily on legalistic concepts for..... the superstructure of his treatment of rhetoric, e.g., the division of proofs into argument and evidence is a legal concept which Aristotle applied to all three types of speaking. .....

So, though not manifestly stated, it appears that Aristotle uses a jurisprudential model for understanding opposition, persuasion and Reason in discourse. To

assure us, Brandes points to some comments by Bonner [p.110 1927] who observes:

> [The Athenians] were a nation of lawyers.....[who] were extraordinarily familiar with legal processes. ..... Litigation permeated the entire citizen body to a degree quite impossible in modern communities.

Bonner further argues that the plays of the comic dramatist Aristophanes [c.310-230 BC] – especially *The Wasps* and *The Parliament of Women* – could only be appreciated if the Athenian audiences were familiar with "the intricacies of the law".

In recent times, the jurisprudential metaphor can be found in the seminal work of Toulmin [1958] and Perelman [1958], each of whom resorts to such comparisons. Though he used a legal analogy, Toulmin was inclined to dismiss the existence of a universal conception of rational discussion and debate that covers the consortium of disciplines. Another person who takes a sceptical stance on the law as a guiding paradigm is Sparkes [1991]. What I intend to do is argue for the law as a guiding paradigm and attempt to get at a universal conception of rational dispute in discourse.

Jurisprudential Model. At the very least, it is recognised that there is a general framework for understanding disputes in discourse. Even those familiar with the law recognize this commonality; and suggest we may get at this framework through understanding legal activity better. Indeed, legal thinking and reasoning may be considered to be a special case of a general practical reasoning (GPR). With reference to the shared view of contemporary writers such as Ahlis Aarnis, Robert Alexy, Manuel Atienza, Alexander Peczenik and others; MacCormick [p.478 2000] makes this observation:

> Legal reasoning is the process of devising, reflecting on, or giving reasons for legal acts and decisions or justifications for speculative opinions about the meaning of law and its relevance to action. Many contemporary writers.....propound the view that legal reasoning is a particular instance of general practical reasoning. They suppose, that is to say, that reasoning can link up with action, guiding one what to do, or

> showing whether or not there are good reasons for a proposed course of action or for something already done. They suppose also that in Law reason links up in legal decisions in this way. Both suppositions are well founded. Law regulates what to do and how to respond to what has been done, doing so within an institutional framework of legislatures, law-courts, enforcement agencies and the like. It is a feature of legal institutions that they are expected to have, and usually do give, good reasons for what they do, and to do this in public. Legal reasoning is therefore not only a special case of practical reasoning, but a specially public one.

Clearly then, even some members of the legal fraternity recognize the tacit existence of some general framework for GPR or disputes in discourse. What is not apparently realised is that law itself best exhibits the abstract, general character of GPR.

What then is the character of such a general framework for (say) GPR? Guided by a jurisprudential metaphor, it has been suggested – beginning with Aristotle– the courts of law constitute a general model for disputes in discourse. This is called the jurisprudential model for disputes. It is apparent in Mill's [1859] *On Liberty* (perhaps inspired by his association with Bentham) and in more recent times in the works of Toulmin [1958] and Perelman [1958] and others. Stripped of their legal trappings, these fallible corruptible self-governing systems of inquiry and decision-making exhibit the essential features which apparently capture the structure of rational discussion and debate within a community or society. I should emphasise that I am only interested in their abstract character in so far as they point to universal categories and relationships across disciplines and everyday life. This I take to be independent of the operating principles of a court of law, be they inquisitorial or adversarial in nature. Intuitively at least, it seems that many, if not all, disputes seem like casual variants of disputes in law. The conceptual scheme pertinent to GPR, especially one based on a jurisprudential metaphor, is further developed in chapter 4. This suggests a common framework of understanding.

Is a jurisprudential metaphor appropriate to the activity of social groups, especially those engaged in critical discussion or debate? The forensic

approach, guided by such a metaphor which has its origins in Aristotelian insights, suggests that it is. I now consider some supporting arguments and defence of the jurisprudential model.

First, there are a number of features of courts of law which, on closer analysis, suggest inherently general categories and relationships in the face of any alternative framework. They include: rules of procedure, rules of evidence, standards of proof, weight of evidence, evidence-based arguments, convincing (rational persuasion) and support strength of arguments, burden of proof, common knowledge and presumption, agreement of facts, facts in issue, admissibility of evidence, quality of the evidence, probative value of evidence, evidence-based decision-making by jurors and judges as well as logistic and economic constraints on the operation of the courts. Furthermore, there is a plethora of argument and evidentiary forms not found together in any other discipline -- except perhaps philosophy. Also, with today's methodological and technological developments, there are more options for lawyers and prosecutors to choose from. In recent times statistical studies, mathematical proofs, empirical studies etc. are used in court cases. The law, for better or worse, makes use of the gamut of argument and evidence subject to the strictures of legal standards. The thoroughfare which joins law to the other disciplines is a two-way street. Conflicts amongst practitioners in a community or between practitioners of different disciplines sometimes find themselves in a court of law. Other times a practitioner is "brought to justice" through an institution of society such as some law enforcement agency. These disagreements or conflicts are not readily solvable by the practitioner. The mathematician can't merely appeal to a proof, the Scientist can't merely appeal to experimental findings, the restricted philosopher can't merely explicate underlying assumptions or do some conceptual analysis and bring the matter to rest. As in daily life, the gamut of arguments and evidence is much larger.

Second, there is a pragmatic transfer-of-learning between Law and other disciplines. Other professionals it seems tacitly recognise the general usefulness of the ideas and language of legal discourse and dispute. Here,

there may indeed be a consensus. This presumes some legal background gained through education and/or vocation. An interesting observation is that if one attends to the articles and interviews of journalists, politicians in parliamentary debates etc their language use is generally legal-like but not necessarily legalistic. The likely reason for this is the practical usefulness of the jurisprudential outlook and its expression through rational discussion and debate. For example, consider the recent advice given to students in their chosen profession. At the beginning of 2004, Bob Carr -- the then current NSW Premier and a past student of UNSW – gave a Welcome Address to the students of UNSW via their campus newspaper. In this address, Carr [2004] discussed becoming a politician. He pointed out that it is not enough to have "bright ideas or a good brain". You've got to be able to relate to, communicate with and persuade others. What he has to say generally applies to the discourse of any community and the disputes that arise. His advice was:

> Get in there. Become involved. ..... Listen to the debates. Read and research to hone your own opinions. And when you get up and speak, make sure you have something compelling to say. ..... You've got to sell your ideas, make your case, persuade people with strong, well-constructed arguments and killer facts, capture their attention with vivid imagery and clear messages. ..... Good arguments clearly and forcefully expressed will win people's attention and, hopefully, their respect and support.

This statement captures some of the sentiments of forensics as a rational approach to dialectics. Of course, it is important to remember that agents and groups can display different cognitive styles with regard to rationality in action. When I read Carr's advice to students it sounded as much a manifesto for becoming a lawyer as it did for becoming a politician or even an investigative journalist. Both dialectical ideas and language have a legal character; or, more precisely, they characterise a forensic approach to public and parliamentary discussion and debate. Also, it's advice that could even be given in the community of mathematics, science, medicine etc.

Third, the legal fraternity has a good track-record in resolving disputes as to the truth (inquiry), conflicts of interests etc. across a variety of issues and

disagreements. In general, there is something to be learned. Of course, it doesn't always get it right. The possibilities of error and corruption are always present. For example, the emergence of reliable DNA technology and the inclusion of DNA evidence has shown up miscarriages of justice. Other examples relate to corruption such as fabricated evidence, perjury etc. Such instances of fallibility have lead to law reform in jurisprudence and the rules of evidence. However, reforms only go to improving the robustness of the jurisprudential approach to disputes, not withstanding improvements to forensics generally.

Fourth, it is a robust system of dispute which that endeavours to come to terms with the business of life. In this, there are lessons to be learned. There are limits to performance; in particular the limits of time, effort and cost. This is consistent with Simon's [1957; 1982] critique of game theory. The deontic pressures of law and order have forced the legal fraternity to come to terms with workable, acceptable ways of not only rationally persuading others and determining the truth of the matter. Granted, it has also led to ways of perverting "the course of justice" by exploitation and corruption. Still, legal dispute is a highly developed form of discussion and debate which is grounded in the business of life.

Fifth and last, if the legal system is a good basis for a GPR framework, then it is already fully documented for study. Anyone who has engaged in rational discussion and debate in the disciplines e.g. mathematics, science, medicine etc. is likely to recognise sufficient common ground. They may not be able to fully or clearly articulate the commonalities but it will be familiar. For better or worse, many disciplines don't fully document their disciplinarian theory and practice. Sure, some of their members take the time to write a chapter in a text, an article in a journal or magazine and even a book about this. There are tacit suggestions in the charter and code of conduct of professional bodies; however, in law it is a legal necessity. What you have in law is an on-going concern with fully documenting the theory and practice of law and the rationality which underwrites its activities. Given the common ground, the legal self-

documentation offers a rich source for targeting the ideas and language of this common ground.

Now I turn to the alternative view and critically examine this position in my defence. Today, we are inclined to think that forensics has to do with the legal system, in particular crime scene investigation (CSI) and courts of law -- and therefore, perhaps, inappropriate elsewhere. That is, to be guided by some jurisprudential metaphor is to be mistaken. Sparkes [p.216-217 1991] expresses such a view. Leading up to this view, he characterises forensics as follows:

> The basic meaning of 'forensic' is pertaining to courts of law, or resembling legal proceedings. A forensic laboratory is a laboratory for the examination of objects likely to be used as exhibits in legal proceedings. It differs from (e.g.) other departments of police headquarters, not by being forensic, but by being a laboratory. Newspapers frequently tell us of scientists giving 'forensic evidence'. All witnesses in a court case give forensic evidence. The scientist called as an expert witness gives scientific evidence.

I concur with this account. Clearly, Sparkes is aware that “forensic” is also used to mean at least “resembling legal proceedings” and that’s what I wish to emphasise. The essence of that resemblance is central to the GPR or universal conception previously alluded to. He describes the legal approach -- specifically the adversarial system -- this way:

> Legal argument usually takes place in a very stylized situation. There are two opposing sides, each represented by a barrister. The judge is there to see fair play between the two sides and either to decide the issue himself or to sum up the arguments of both sides for the benefit of the jury which will make the decision.
>
> In such a situation, a barrister's duty is to present his client's case as strongly as he can without being deceitful. It is no part of his duty to draw attention to the weak aspects of his client's case, nor need he dwell on the strengths of his opponent's case. The opponent can be relied on to do both these things. It is hoped that out of this clash between two skilled advocates, truth and justice will emerge.
>
> A barrister is an advocate, rather than an investigator. His arguments are shaped and controlled by the practical requirement of securing a decision which favours his client.

Quite so. But this does not necessarily preclude “the search for truth” and/or “the pursuit of justice” in such a system even if there is latitude for mistake and corruption. He then goes on to assess the applicability of this legal model to other contexts and situations. He declares:

> This style of arguing is suited to the law-courts, and, for that reason, is called forensic. If used in other settings, it may be out of place. In philosophy, it certainly is out of place.

Strictly speaking, he has a point but doesn’t even make his case. And even if he did, he’d be subject to challenge in the form of argumentation and criticism. He would have to deal with counter-claims, opposing arguments, objections, rebuttals etc. Most people would agree, I’m sure, that a reaction to Sparkes’ position would go something like this. And that, be it formal or otherwise, the conversational exchange looks *like* what would happen more-or-less in a court of law. That is the point of the legal analogy. Of course, similarity comes in grades; and having many similarities is better than having just one if metaphors and analogies are to have worth. Where forensics is concerned, it is a rational approach to dialectics and for good reason is prominent in the workings of courts of law. However, the abstract, general conception of such an approach is by no means solely applicable to the legal system.

Interestingly, Sparkes [p.217 1991] goes on to clarify a distinction which is important to my position. To take a forensic approach does not necessarily imply a legal approach. He first points out that “'forensic' should be distinguished from 'legalistic'”. He then elaborates as follows:

> 'Forensic' draws its meaning from the argumentative cleverness, quickness, tenacity, and singlemindedness of the good courtroom advocate. 'Legalistic', on the other hand, draws its meaning from another aspect of legal practice: a concern for the making of distinctions, for precision, for following procedures regarded as established and correct. 'Legalistic' is almost always derogatory; e.g., it suggests an undue concern for distinctions, precision, etc. But in many individual cases, there can be reasonable disagreement over whether such a concern has

> reached undue proportions. 'Legalistic' can be just a lazy person's self-defensive sneer.

Note the abstract, general character of his account of “forensic”. By this, he is making my point. Allowing for debate over the nature of the universal conception, this is precisely what is relevant to forensics as a rational approach to dialectics. The legalistic details are irrelevant to this account as they are tied to context and situation in the particulars; that is, the legal discipline

There are some possible opposing arguments for which I would like the right of reply by way of objection. One objection has to do with the technical language of the law. It is unlike ordinary language, so how can the legal arena really be a guiding paradigm? This objection is understandable but it misses the point. All that is relevant is the abstract character of this domain. Indeed, such a criticism has become a concern to some lawyers interested in truth and justice. In recent times, there has been a plain english movement in legal circles. Thus, the serious possibility of a semi-technical language based on ordinary language supplanting legalese in courts of law makes this objection moot.

Another objection has to do with the rigours of legal procedures. Quarrels, arguments and debates in daily life or in other disciplines are not like this. Such an objection also misses the point. I am not at all interested in the legal trappings -- which I want to strip away. What is of interest to me are the use of rules, standards, violations, burden, objections, rebuttals etc. Situations vary as to the nature, scope and enforcement of codes of conduct. Indeed, it is arguable that without at least minimal regulations of some kind, intellectual disputes would be utterly pointless.

There may be more objections of similar character; however, it seems to me that all these objections rely on what appear to be stark dissimilarities. And I would generally concur with these criticisms. But I am not saying that what happens in legal circles is exactly what happens in any dispute in any discipline or in daily life. What I am saying is that the operating principles of law agree more precisely and more widely in scope with GPR or the tacit abstract general

(if not universal) categories and relationships of reason, argumentation and disputation than the operating principles of other disciplines. This includes the economical, political and social pressures imposed on the evidence-based decision-making processes of the law. Not only is it corruptible, it is fallible and subject to all manner of prejudice and bias.

Overall, I see the jurisprudential model as a fair and reasonable inspiration in prospecting for the aforesaid general categories and relationships -- not to mention the problems associated with a general theoretical framework. The urgency of issues relating to “law and order” have necessitated, if at times through trial-and-error, the crucial development of a robust understanding of discussion and debate based on principles of rationality. Those principles stand under the umbrella of fallible objective critical rationality. Though antithetical in some respects, it has a kindred spirit in Popper’s critical rationalism.

Forensics. Now I attend to forensics which is founded on a jurisprudential metaphor. The spirit of forensics as argumentative discussion and debate *sui generis* is due to Protagoras of Abdera [c.481-411]. Zarefsky [p.193-194 v.2 1989] refers to him as “the father of debate” and points out that the elements of debate can be found in the passages of Homer. However, as previously discussed, it was Aristotle [c. 384-322 BC] in the *Art of Rhetoric* that the rudiments of forensics are given. It is apparent that a jurisprudential metaphor guides Aristotle’s attempt to unify the different genres of speaking by one overarching conception. The other devotee was Cicero. In his *De Officiis*, Cicero [Bk.i Ch.16 Sect.50 106-43 BC] states:

> Reason and speech.....bring men together and unite them in a sort of natural society. Nor in anything are we further removed from the nature of wild beasts.

Here, Cicero identifies the fundamental requirements for rational discourse. Add to this organised opposition and you have rational dialectics. Currently, is there such an approach to dialectics? Interestingly, there is. It just so happens to be the Aristotelian tradition of forensics.

Today, according to Zarefsky [pp.193-194 v.2 1989], forensics is concerned with

> .....those communicate activities in which argumentation plays a major role -- primarily public speaking, discussion and debate. ..... It.....serve[s] as a means of public decision-making on controversial questions.

Also, he contends that "forensics is rooted in several philosophical presuppositions" which relate to rationality, community, knowledge etc. I shall critically examine them later on. What is not immediately obvious is the importance and worth of rationality in the conduct of discourse and dispute. It is suggested by Zarefsky's [1989; 1996, ed. 2005] emphasis on argument and argumentation throughout his article and book; that is, there is a tacit preference in forensics for appeals to Reason. Given this, its historical origin and its traditional association with law; then, it's reasonable and plausible to say that forensics is the main, perhaps even dominant, rational approach to public-speaking, discussion and debate; in short, forensics is the main contender for a rational dialectics.

A varieties of forensic activities have emerged in the 20th century. Based on context and situation, Zarefsky [pp.193-194 v.2 1989] identifies four major forms. They are:

(1) Parliamentary debate
(2) Political campaigns
(3) Advocacy systems (in special fields)
(4) Debating contests

To this list of forensic activities can be added:

(5) Investigative reporting in journalism
(6) Intellectual debate in Academia

Clearly, there are different possible ways in which to conduct disputes in discourse e.g. different parliamentary systems of government, different legal systems across the world etc.

There are differences of opinion as to the conduct of critical discussion or debate in discourse. However, there is one rational approach to dialectics that has a long tradition and a good track-record of success. The approach is called forensics – even though it is confined to claims rather than opinions generally. It is my contention that a generalisation of forensics to deal with opinions and not just claims – that is, the alethic opinions of inquiries into the truth of things – offers the possibility of a unifying general theoretical framework for understanding non-violent disputes, specifically critical discussion or debate in the discourses of mind or community. Generally speaking, such an approach to critical discussion or debate is founded on what I call the six pillars of dialectics. They are: opinion, opposition, persuasion, regimentation, Reason and deliberation. It is worth noting that an aspect of the regimentation of conduct, which includes adjudication, is morality and ethics. From an ethical-rational standpoint, disputes e.g. those relating to law, ought to be non-violent, cost-effective, impartial, have finality; and be open to revision where there is serious error or mistake that was decisive in deliberation. These concepts are ultimately necessary in addressing the PKG and the PRC; and are developed in greater detail in the next chapter.

3.3.3 Game-theoretic Dialectics and Forensics

The focus has been on Reason and action in discourse; in particular, a dispute sub-type called critical discussion or debate. Previously, two highly-regarded theoretical frameworks were critically examined. They are:

(1) Game Theory (GT). This is a rational approach to decision-making in organised social activity. It is inspired by a game metaphor.

(2) Dialectics. This is a rational approach to decision-making in non-violent (rational) dispute in discourse; that is, critical discussion or debate. It is inspired by a jurisprudential metaphor.

It is important that I qualify what I have said so far. GT was not critically examined in detail at this time. One longstanding concern, identified and responded to by Simon [1957; 1982], is the problem of rationality. What is it for an agent to be rational? With regards to action, he challenged the optimality assumption with his notion of satisficing. Since then, others have endeavoured to answer this question. For the purposes of this philosophical inquiry, I have attempted to adequately address this concern in prior sections of this chapter. Furthermore, a particular philosophical view is taken of dialectics. Dialectics is best understood according to a jurisprudential metaphor; this is tantamount to a generalisation of the forensics of claims to the dialectics of opinions.

This presents us with a dilemma. Both seem to be reasonable and plausible, if not viable, approaches. Which one is right? Which one should we choose? Perhaps a choice is not necessary as they are not really antithetical to one another. It is conceivable that the dialectics of opinions may be re-stated in terms of game theory or that dialectics offers guidance to a more advanced game theory that can readily accommodate the various dispute types. On this point, I recommend a game-theoretic dialectics. Previously, I briefly discussed GT with the intent of making it cohere more with social activity in the real world, especially contentious conversations in and amongst agents. A result of nascent attempts in the second half of the 20th century are the notions of “dialogical game” and conversational game”. Clearly, critical discussion or debate constitute a proper sub-type of conversational activity; hence, I posit games of disputation or dispute games. Central to GT is decision-making; and central to the dialectics of opinions is establishment-based decision-making (EDM), which is critically examined in sections 4.4 and 4.5 of the next chapter. It is therefore possible to conceive a game-theoretic dialectics that rests on EDM.

What then of claims? Claims are alethic opinions; that is, opinions concerning the truth of things in some domain or world. Traditionally, they have been the province of a rational dialectics called forensics. Guided by a jurisprudential metaphor that is inspired by Aristotelian insights, forensics is useful as a resource in specifying a (rational) dialectics of opinions generally. In turn, theoretical developments of dialectics may inform forensics. And, if there can be a game-theoretic dialectics; then, there has to be a corresponding game-theoretic forensics based on proof-based decision-making (PDM), given that forensics is equivalent to a rational dialectics of alethic inquiry in discourse. Of course, all of this remains to be seen. In what follows, dialectics is further developed from a strategic perspective. This is then applied to alethic inquiries in discourse in the light of outstanding issues in epistemology, the study of (beliefs and) knowledge.

CHAPTER 4: POSITIONS, CONTEST AND ESTABLISHMENT

"Very well," cried the Squire, speaking very quick, "the premises being thus settled, I proceed to observe that the concatenation of self-existences, proceeding in a reciprocal duplicate ratio, naturally produces a problematical dialogism, which in some measure proves that the essence of spirituality may be referred to the second predicable.... Answer me directly to what I propose: Whether do you judge the analytical investigation of the first part of my enthymem deficient secundum quoad, or quoad minus; and give me your reasons."

"I protest," cried Moses, "I don't rightly comprehend the force of your reasoning."

...."Oh, Sir," cried the Squire, " I find you want me to furnish you with argument and intellects too. No, Sir; there I protest you are too hard for me."

Oliver Goldsmith
The Vicar of Wakefield
pp.10-50 1914

The focus of my philosophical inquiry now turns to strategic conduct in discourse and dispute (strategics). My aim is to develop a theory of strategy and tactics as it relates to critical discussion or debate in discourse. Such a theory can be called strategics [Gk. *stratçgiá*, a concern with planning (military) movements and operations; Barnhart p.1074 1988]. This is best understood on the basis of a means-end conception. Though I don't give a definitive account of strategics at this time, I endeavour to judiciously cover what I think is appropriate for my philosophical inquiry.

First, I consider the purpose of disputes, specifically critical discussion or debate. Some of these interests relate to disputes themselves. Fundamentally, there is nothing wrong with persuading or winning in dispute. What is wrong are

certain interests brought to the fray. They include: persuading for persuading's sake, which may involve no finality in view and winning for winning's sake. On this basis, convincing is winning in dispute. Ideally, disputes develop toward a stasis wherein the dispute is properly settled according to some common ground of convincing. A jurisprudential model suggests an account of convincing in terms of a standard of establishment (or proof) as the basis of dispute resolution.

Second, I consider the appeal forms called arguments. Due to the possible presence of intellect and Reason, it is necessary to recognize arguments and evidence as a basis of persuasion. Essentially, they are rational appeals whose persuasiveness fundamentally rests on cogency. Cogency depends on a joint-conception of inference and probability. Given this, the cogency of an argument (or case) can be used as a measure of the (net) persuasive support strength. This approach addresses the dilemma of dual certainties that arises through the use of arguments as a means of rationally appealing to minds.

Third, I consider the conduct of critical discussion or debate in discourse. Essentially, this involves strategic argumentative activity directed at the development of a ground (or case) by each position. The aim is to win (i.e. be victorious, dominate etc.) through persuasion .in discourse. This conduct is characterized by organized opposition, fallibility, defeasible reasoning and persuasion. As organized opposition suggests, disputes are regulated and arbitrated by a code of conduct implemented by conscience or authority. Essentially, such persuasive moves express appeals like those originally identified by Aristotle. Arguments are appeals to (the influential aspect of) Reason; and, their persuasive (support) strength is based on cogency. This approach enables the dilemma of dual certainties to be addressed. Sometimes contests involve many rounds occurring over many periods of time. It is possible to identify a universal argumentation scheme (UAS) which regulates the contingencies of disputes. The activity of disputes can involve persuasive appeals and defeasible reasoning. This UAS encapsulates argumentative

activity which can lead to infinite regresses. However, a principle of marginal returns necessitates a cut-off.

Fourth, I consider the notions of ground and case along with associated notions of establishment and proof. A ground (or case) is strategically developed according to a schedule of persuasive support strengths for appeals, arguments or appellative/argumentative plays. Consequently, the value of its net support strength changes as does the corresponding net certainty (or probability) for the opinion or claim in keeping with some CPR-T. A ground or case can attain the status of an establishment or proof as specified by some standard. With reference to the graph of an agent's OPR-T, and a position whose ground or case has a weight (net support strength) that is the first and only one to meet or exceed a benchmark (i.e. a threshold), has established (or proven) its opinion (or claim).

Fifth and last, I consider deliberation, proof and dispute resolution. In a dispute, as in any contest of strength, a decision has to be made as to whether or not there is a winning contestant or victor. This is crucial to dispute resolution. This decision-making can occur in mind or community; and it is covered in the code of conduct for disputes. There are dis/advantages in both individual and social decision-making. Disputes end in equipollence or preponderance of weights. Through deliberation – comparison and decision – of the grounds or cases of respective positions, it is determined which position satisfies the standard of establishment or proof. In both respects, there are weak and strong standards. Here, proof is rational establishment in disputes concerned with alethic inquiries. One position dominates -- though not necessarily eliminates -- the other position/s by defeating them in a contest of (rational) persuasion in discourse. Proof-based decision-making can be understood game-theoretically in terms of scores and voting within a group. As such, Arrow's theorem becomes relevant to disputes.

4.1 Purpose

Kennedy [p.4 1980] describes the relation between purpose and persuasion. He treats persuasion as equivalent to something akin to social influence. He states:

> The author of a communication has some kind of purpose, and rhetoric certainly includes the ways by which he seeks to accomplish that purpose. The ancient world commonly thought of this purpose as persuasion but meant by that something much looser and more inclusive than persuasion as understood [today]..... Purposes cover a.....spectrum from converting hearers to a view opposed to that they previously held, to implanting a conviction not otherwise considered, to the deepening of a belief in a view already favourably entertained, to a demonstration of the cleverness of the author, to teaching or exposition.

Traditionally, it is recognised that rhetoric is "an art of persuasion". Generally, I agree with this account of rhetoric; however, I think it requires a deeper analysis. Purpose is best appreciated through the means-end conception of teleology as used in chapter 1. Simply, persuasion is a means to an end – and that end is some kind of "effect on the person" [Corbett 1965]. Typically, as critically discussed in chapter 1 and 2, that effect is directed at an agent's attitude toward a thing. In the case of dispute (discussion and debate) in discourse, a number of aims have been proposed over the centuries. They are listed below. Thus, the aim of a dispute is to:

(1) Persuade the audience (sometimes for the sake of persuading).
(2) Win the contest or be victorious (sometimes for the sake of winning).
(3) Resolve a difference of opinion.
(4) Convince the audience of a view.
(5) Establish or prove a point.
(6) Progress or improve the understanding.

Here, relative to some reference agent or group, the audience is others (narrow sense) or it's the self and/or others (wide sense). Without judgement of their worth, all of the above possibilities are reasonable and plausible interests. So,

which is the right one? To answer this question, I shall critically examine each of the aforesaid proposals as I work toward a final view.

4.1.1 Persuasion and Winning the Contest

In the first instance, I consider two contentious possibilities. The aim of a dispute is to:

(1) Persuade the audience (for persuading's sake).
(2) Win the contest or being victorious (for winning's sake).

In *Fallacies*, Hamblin [1970] recognised there is a paradox in our understanding of persuasion in debates and in disputes generally. Here, it is called the persuasion-win schism. The schism appears to arise from comparing disputes in real-life situations with debating competitions. This results in two views of disputes arising from this comparison.

One view is that disputes are about persuading the audience. Weaver [pp.221 1970] proposes and argues that men are inherently rhetorical due to their purposive nature. He states:

> Men are.....born into history, with an endowment of passions and a sense of the ought. There is ever some discrepancy, however slight, between the situation man is in and the situation he would like to realize. His life is therefore characterized by movement toward goals. It is largely the power of rhetoric which influences and governs that movement.

Clearly, as experience attests, not all our goals require persuasion; however, some or even many do. Where this is the case, ".....rhetoric [is] the attempt through language to make one's point of view prevail..... [This] grows out of the nature of man". In this, he concurs with Burke [1969] who, argues that all rhetoric is "a rhetoric of motives". He goes on to argue that all disciplines exhibit some "rhetorical intention" as described above.

Another view is that dispute is about winning the argument. Reese [1980] points out that "a mode of argument[ation] having as its goal victory in disputation" is called eristic by the Greeks, noting that "the Megarian school of philosophy is associated with this approach. Freudenthal [p.157 1998] characterises it as follows:

> .....controversies show that both "criticism" and the defense of the "core" of a view are not abstract alternatives but in reality complementary aspects of the same activity. The combination of attack and defense is due to the antagonistic character of a controversy: the aim of each side is superiority over its rival, both by refutation of the opponent and by successful defense of one's own position. Victory, relatively greater adequacy, is the immediate goal, objective adequacy can be the result.

Where disputes are concerned, winning the argument (in the sense of dispute) may not occur. Still, the held position may turn out to be adequate at the time. Taking both views into account, it appears that dispute *prima facie* involves both persuading and winning but not entirely in the way they occur in debating competitions. For instance, the persuasiveness of a competitor in a debate is only one factor by which they are judged within the given time-frame; whereas in a dispute, it is the driving-force in resolving the dispute.

There is a distinction which seems relevant to understanding the use of "persuasion" and "winning" in the context of real-life disputes. It is the task-achievement distinction in language use. This distinction was identified and discussed by Ryle [pp.130-131, 149-153 1949] in *Concept of Mind*. Sparkes [p.227 1991] elaborates:

> .....this distinction [is marked] by calling words which 'signify not merely that some performance has been gone through, but also that something has been brought off by the agent going through it' *word of success*, *achievement words*, or *'got it'-words* (e.g. "catch' as in cricket, 'solve', 'find', 'cure', 'deceive', 'persuade', 'arrive'). These can be contrasted, on the one hand, with *failure-words* or *'missed it'-words* (e.g. 'Drop', 'lose', 'foozle', 'miscalculate'), and, on the other hand, with *task-words* or performance or 'try'-words which imply neither success nor failure (e.g. 'Argue', 'look for', 'run in a race', 'treat a patient', etc.).

Sparkes appears to rely on an intuitive appreciation of language use. Though this can be misleading, agreement (especially a consensus) can indicate the right appreciation.

Apparently, there is a difference in the use of persuasion and winning. Firstly, "persuading" is ambiguous out of context. Agent A might be persuading someone C to accept the opinion p to wit "Demons whisper in a person's ear and cause them to do bad things". An agent B is persuading C otherwise. However, I can say that A is trying to persuade C to accept p. Thus, there appears to be two uses. They are:

(1) Task-persuasion. I'm engaged in the task of persuading you to accept p.
(2) Achievement-persuasion. I have succeed (or not succeed) in persuading you to accept p; in short, I have persuaded you to accept p.

There is another word that better matches the turning-point of event (2); and that word is "convincing". Persuading C (task word) to accept p can give way to convincing C (achievement word) to accept p. Now, consider "winning". Either I'm on the verge of a win or I have won. There are no half measures. This is apparent in games and competitions like debating. Agents A and B participate in a debating competition; and based on the official criteria for evaluating performance, the judge decides, outside of a draw, that the winner is B. Clearly, "winning" is an achievement word.

Persuading and winning are not necessarily antithetical notions. An agent may have an interest X which it pursues by persuading others e.g. taking up a cause, taking up a point-of-view etc. An agent may succeed or fail in this endeavour. Whether successful or not, they at least attempted to persuade others. If they succeed, then this is a kind of win or victory, especially if there is a manifest opposing force due to resistance in the target and/or a competing agent. They have achieved their goal. Thus, in this sense, there is successful

and unsuccessful (or failed) persuasion in some sense. Where it is successful, we may refer to it as persuasion of the winning kind; or simply, winning persuasion. This concept is an artifice of language I merely used to get something more familiar. A so-called winning persuasion is something an agent attains. What this seems to be, in the context of critical discussion or debate, is convincing others and/or the self. When an agent convinces, it has arrived at this end by means of persuasion. It is a win or victory in the sense that it has been working against resistance and/or the argumentative moves of others.

For the Sake of the Activity. There is another sense of persuading or winning which may indeed be the central cause behind the persuasion-win paradox. Sometimes agents in dispute are like sportsmen in a sport. In *Thoughts on Various Subjects*, Pope [1727] describes this approach as follows: “A disputant no more cares for the truth than the sportsman for the hare”. Here, he is referring to the sport of hunting. It is “the thrill of the chase” or the hunt, not the actual capture of the hare which is important to the hunter. Likewise disputing rather than seeking the truth is more important to an agent. Elsewhere he reiterates his point. stating: “True disputants are like true sportsman; their whole delight is in the pursuit”. Clearly, disputes can be likened to a sport or game. Where persuasion and winning are concerned, the analogous activities are persuading for the sake of persuading and winning for the sake of winning. These activities can indeed be interests just as hunting or playing poker can be interests in themselves. But what good are they? Participating in disputes, especially ones that involve important issues of controversy, merely to satisfy some passion i.e. desire, need etc. to experience the activity of persuading or winning may be judged as bad form – as imprudent or unethical in character. Clearly, these are matters of value judgement. What is immediately evident, for those who are inclined to productivity, is that there can’t be progress in any cause where disputes are conducted merely for the sake of disputing. Progress only comes with a succession of good dispute resolutions.

Overall, both “winning the argument” and “persuading the audience” seem to be important sides of the one coin where critical discussion or debate are

concerned. In disputes, the winning mode is actually convincing others (and/or the self). Hence, the so-called persuasion-win schism is laid to rest by a notion of winning persuasion.

4.1.2 Dispute Resolution, Convincing and Establishment

Here, I consider the remaining four contentious possibilities. The aim of a dispute is to:

(3) Resolve a difference of opinion.
(4) Convince the audience of a view.
(5) Establish or prove a point.
(6) Progress or improve the understanding.

I shall critically examine each option in turn with the view to determining a good-and-proper aim for critical discussion or debate generally.

Resolution of a Difference of Opinion. According to van Eemeren, Grootendorst and Henkemans [Pref. p.ix, Intro. p.xi 2002] “argumentation is.....primarily aimed at resolving a difference of opinion by verbal means”. They go on to describe argumentation as a social activity where verbal means of communication can involve oral or written forms. We might well add non-verbal means as well; and view disputes, arising from a difference of opinion, as a contest of strengths based on opposition, persuasion and perhaps reason. Assuming the dispute reaches some kind of resolution stage, then there are two possible outcomes to consider. They are:

(1) Equipollence. There is an assessed equality of the net persuasive support strengths of the ground associated with each position.
(2) Preponderance. There is an assessed inequality of the net persuasive support strengths of the ground associated with each position.

These outcomes are familiar to a jurisprudential model of disputes. Outcome (1) is like a stalemate in a game or a draw in a fight; whereas outcome (2) is like a win in a game or a victory in a fight. As previously indicated, the kind of winning persuasion that seems fitting is convincing others and/or the self.

Convincing. Convincing can be a mark of winning through persuasion or preponderance. In one of his lectures, Blair [Lect.XXXII p.117 1783] identifies the purpose of agents engaged in discourse. He states:

> For the great end for which men speak [or write] on any serious occasion, is to convince their hearers [or readers] of something being either true, or right or good; and, by means of this conviction, to influence their thought and practice. Reason and argument make the foundation, as I have often inculcated, of all manly and persuasive eloquence.

However, another account of convincing is possible. For instance, in their preliminary account of argumentation, van Eemeren, Grootendorst and Henkemans [Pref. p.ix 2002] state:

> .....Argumentation is viewed as primarily aimed at resolving a difference of opinion by verbal means. As a consequence, argumentation is.....part of an explicit or (in case of a monologue) implicit discussion between two parties that have different positions with respect to the same proposition. Each party's argumentation is directed at ending the difference by convincing the other party of the acceptability of a certain standpoint.

The term "standpoint", or even "stance", is another term for position in a debate over an issue. Furthermore, they recognise both monological and dialogical forms of argumentation.

There is an obvious difference between these two views of convincing. In one, it is convincing the audience; and, in the other, it is the proponent convincing the opponent. Both make sense. It may be fortuitous that there is a common ground of convincing tacitly or otherwise agreed to in each situation. However, there may be none at all. In both situations, convincing is then subjective in character. A common ground of convincing that is based on principles of rationality can make it objective; and therefore minimise if not remove the exigencies of

subjectivity. Essentially, it disciplines proponents, opponents and audience in a debate. However, to rely on the conscience of each agent, leaves the way open for the possibilities of delusion or deception with regard to compliance. An authority – in the form of an incorruptible adjudicator – seems necessary as it better assures that a good dispute resolution eventually prevails.

Establishment or Proof. Guided by a jurisprudential model, a common ground of convincing can be some standard of establishment or proof. Thus, the aim of a dispute is to establish (or even prove) an opinion. This is sometimes contrasted with persuasion. Sparkes [pp.215-216 1991] elaborates:

> There are two characteristic aims of argument:
>
> (1) To establish a conclusion as worth believing or a prescription as worth following; and
> (2) To persuade the audience.
>
> Sometimes, however, an argument may establish without persuading or persuade without establishing.

The persuasive aspect is called eristic whereas the establishing aspect is called thetic. Sparkes contrasts eristic with the (early) dialectics but, quite rightly, recognises that the term "is an appallingly ambiguous word". Hence, I have elected to use "thetic" which is in keeping with establishment. I grant that such a contrast does occur amongst agents in some disputes. However, it is not a fundamental dichotomy. An associated establishment form is proof. For instance, Angeles [p.245 1992] defines proof as "....a process that establishes (provides firm evidence or complete justification for)" an alethic opinion or claim e.g. " a truth or a fact". That is, proof is a rational establishment for inquiries into the truth of the matter. With this view in mind, the notions of establishment and proof are critically discussed in section 4.4 below.

Progress through Dispute. The last proposal is concerned with progress. In *Pensées*, Joubert [7.31 1842] declares: "the aim of argument, or of discussion, should not be victory, but progress". Based on what has already been said, this is not necessarily so. If an agent persuades for the sake of persuading and then

wins for the sake of winning then, apart from being lucky, there is no progress with regard to properly settling an issue. However, if an agent persuades and ultimately wins a dispute on an issue, then this can be an advance in understanding; in short, progress. For instance, seeking the truth in science by empirical studies and being subject to critical scrutiny in discussion can lead to scientific progress.

Finally, I wish to bring these proposals together in defining the aim of conducting a critical discussion or debate in discourse. Generally, the aim of a dispute is:

(1) To settle an issue.
(2) To resolve a difference of opinion.

In disputes, (1) and (2) are more-or-less the same thing, though it can be said that (1) is done by doing (2). The mark or indicator of settlement or resolution is satisfying some agreed requirement/s. For example, in games it might be a greater score after a time-limit, the greater score after task completion etc.; or the greater criteria-based assessment as in a debating competition. The only other option is attrition; that is, physically and/or psychologically "wearing down" the opponent as in some real-life fight or war. Where non-violent dispute – i.e. critical discussion or debate -- is concerned, it is winning by persuasion. In persuading others and/or the self, an agent can succeed or fail. Where it is success, then it's called winning persuasion or, more commonly, convincing. It is something to achieve. Subjectively, everyone has at least an intuitive appreciation of being convinced or unconvinced with respect to some opinion on an issue. Objectively, a common ground of convincing – based on joint rational consideration, agreement and commitment – avoids disruption and escalation to harm due to meta-disputes about what it is to be un/convinced in debate.

But what exactly is going on here? It would appear that a decision has occurred and a choice has been made when one is convinced in the discourse of debate.

This was suggested by Aristotle [Roberts 1924] who stated that “communication exists to affect the giving of decisions.....”. In more recent times, as Benoit, Hample and Benoit [p.119 1992] point out, “the idea.....that argument[ation] is part of a rational decision-making procedure, were modernized and made forceful.....” in various ways by Brockriede and Ehninger [1960a,b], including their book *Decision by Debate*. This is most evident in a jurisprudential model for critical discussion or debate. A jurisprudential model suggests a basis for a common ground of convincing. It requires that some standard of establishment (or proof) be satisfied as a point of decision-making. For example, if agents are indeed governed by an opinion-persuasion relation with thresholds (OPR-T) or CPR-T as proposed in chapter 2, then it is required that the net persuasive support strength of the ground of each position has to meet or exceed that benchmark (i.e. threshold) before an agent is convinced to hold the opinion of the respective position. Of course, a benchmark has to be located on the scale in a realistic and practical fashion. Give this, dispute resolution has been achieved; and there is a better chance that progress in understanding, knowledge, action etc. has occurred as a consequence.

4.2 Persuasion, Appeals and Arguments

Due to the possible presence of intellect and Reason in discourse, it is necessary to recognize arguments and evidence as a basis of persuasion. They were merely identified as appeals to Reason in the previous two chapters. Here, the nature of features used to characterized arguments are critically examined. Essentially, their persuasive support strength rests on cogency. Cogency depends on a joint-conception of inferential bond and assurance (probability) in the premises; and can be used as an aggregate measure of weight (net persuasive support strength) of a case. This approach addresses the dilemma of dual certainties that arises through the use of arguments as a means of rationally appealing to minds.

4.2.1 Appeals and Arguments

Some people take a rather liberal view of arguments. For instance, Mozley [viii 187 1865], in *Lectures on Miracles* at Oxford, states:

> Anything is an argument which naturally and legitimately produces an effect upon our minds, and tends to make us think one way rather than another.

This is not entirely right. As chapters 2 and 3 indicate, an argument is at the very least an appeal to Reason.

The Nature of Arguments. But what exactly is an argument? What distinguishes them from other appeals? Sure, they appeal to Reason. But what is it about them such that they can influence Reason?

My starting-point is to critically examine the definition from the OED. From this highly-regarded record of language use, I intend to extract and interpret the distinct uses. The OED [pp.625-626 I 1989] defines “argument” as follows:

> Proof, evidence, manifestation, token (passing from clear proof in early to proof presumptive in later usage). ..... A statement or fact advanced for the purpose of influencing the mind; a reason urged in support of a proposition..... A connected series of statements or reasons intended to establish a position and, hence, to refute the opposite..... Statement of the reasons for or against a proposition..... A process of reasoning; argument action. .....discussion of a question; debate. ..... To adduce arguments, argue, reason. ..... To give evidence, furnish proof..... To furnish with argument..... (Rare).

Careful analysis reveals several distinct accounts. First, “proof, evidence.....” suggests some good basis or foundation for the acceptance of some claim or position. But not all arguments are good ones. Arguments vary according to their worth in this respect. Second, “.....[used] for the purpose of influencing the mind” suggests that, as agents are involved in the use of language, then the influence is most likely persuasion. In *Science in a Free Society*, Feyerabend [p.156 1978] describes their persuasive nature. He observes:

> An important rule of argumentation is that an argument does not reveal the 'true belief' of its author. An argument is not a confession, it is an instrument designed to make an opponent change his mind..... If an argument uses a premise, it does not follow that the author accepts the premise..... He may deny the premise but still use it because his opponent accepts it and, accepting it, can be led in a desired direction.

Arguments, being kinds of appeals are used for the purpose of persuasion. Third, ".....a reason urged in support of a proposition" and ".....a process of reasoning" suggests that arguments are reasons or pieces of reasoning of some kind. So, how are they related to Reason? It is necessary to distinguish reason(ing) and argument(ation). A reason is a piece of logical thought wherein a conclusion is inferred from a set of premises. The process is called logical thinking or reasoning. When it is done in the context of critical discussion or debate and it is done with the intent of supporting or opposing a position (more specifically, its claim) then it is an argument. Fourth, "a connected series of statements or reasons intended to establish a position.....". Traditionally, establishment is not as good as a proof but does a similar job. Both are concerned with being logically convincing. Therefore, the connectedness of statements has to do with logical order according to the rules of inference of some logical system. Indeed, the OED's account of "argumentation" suggests this. The OED [pp.626 I 1989] defines "argumentation" as follows:

> The action or operation of inferring a conclusion from propositions premised; methodical employment or presentation of arguments; logical or formal reasoning. ..... Interchange of argument, discussion, debate. .... A sequence or chain of arguments, a process of reasoning.

This account highlights another point not immediately apparent in the OED account. The "connected series of statements or reasons" in an argument involves premises from which a conclusion is inferred. Furthermore, an argument may be an extended or compound argument [Staines 1988] that involves two or more sub-arguments within a more encompassing argument. Fifth, ".....Discussion of a question; debate" suggests that "argument" is just

another term for “discussion” or “debate”. Consider an office situation. When voices are raised someone might enquiry:

A: “What’s wrong.”
B: “We’re having an argument over....”

This is a familiar encounter and comment. What are we to make of this? This is a different though related use of “argument”. Arguments-as-appeals to Reason are often used in arguments-as-debates. Sixth and last, expressions like “.....a reason urged in support.....”, “.....to establish a position.....”, “.....to refute the opposite.....” and “.....reasons for or against.....”. These expressions suggest that an argument is some argumentative move or pattern in a critical discussion or debate; that is, it’s an argumentative strategy. It also suggests there are different argument forms. Overall, philosophical reflection on the nature of arguments by Staines [pp.87-101 1988] and Sparkes [p.80 1991] give credence to the OED’s account, though there are points of contention. Clearly, as Sparkes concludes, there are “several different, though related, senses of ‘argument’ “.

As a point of clarity, it is now possible to list those features normally attributed to arguments on the basis of language use. They are:

(1) Arguments vary in their worth.
(2) Arguments are used by agents as a means of persuasion; that is, they are strategic moves.
(3) Arguments are reasons used in contention within the mind or between agents in a community to support or oppose an opinion or claim.
(4) Arguments have a pattern of inference or logical form, which is crucial to (2).
(5) Arguments are not discussions or debates though they are used in them.

(6) Arguments may be extended or compound arguments; that is, they include two or more sub-arguments.
(7) Arguments are used to convince; that is, to establish an opinion or prove a claim.

These features can be drawn together to give a definition of argument. An argument is a piece of reasoning expressed in the context of discourse (that is, discussion or debate) for the purpose of persuasion. To be sure, "reasoning" alludes to logical structure and "purpose" to strategic interest/s. When compared to other appeals it would seem that inference and logical structure make arguments stand out on their own amongst appeals.

Persuasion, Reason and Argument. Based on the previous conceptual analysis, what then is essential to arguments in discourse? When a persuader is attempting to rationally persuade persuadees – that is, others or the self – to accept an opinion or claim p, it involves:

(1) Intentionality. The persuader has an interest (end) to argumentatively persuade (means) persuadees to prefer one position over another.
(2) Logicality. The use of an argument relies on judgments as to the logical worth of the argument as the basis of rational persuasion. Traditionally, there is a conjoint focus on the premises and the logical correctness of the argument according to some logical system as a standard or norm.
(3) Quality. The argument is regulated by or judged according to some rational standard (and even norms where there is common ground) of arguments.

Note that (2) may be viewed as a feature encompassed by (3); and its separation can only be an emphasis in this respect. I shall critically examine each of these requirements in turn. First, consider intentionality. As the preliminaries indicate, this can be appreciated through a means-end

conception. The end a persuader has in mind is to attempt to influence the attitude of the persuadee with respect to an opinion or claim. The persuadee accepts, rejects or even suspends judgement. Here, the instrument of persuasion is an argument or the case. Persuasion can only appeal to receptive internal influences at work in a mind. There is no guarantee that it will work -- unless, like God, the persuader knows the internal mechanisms of mind and then use this knowledge to maximise its chances of success. Second, consider logicality. Arguments are expressed through language and/or other sign systems of cognition and conversation. By doing so, they are made observable and possibly recordable in some way. This makes them open to public scrutiny; and therefore they can be critically evaluated by others and even the self as to their logical worth. Later on, a notion of cogency is critically developed as the basis for making judgments as to their logical worth. Third and last, consider quality. Persuasion can only work to the extent that the argument strategically used by an agent satisfies some standard of argument worth that the target is personally committed to. Fogelin and Sinnott-Armstrong [6th ed. 2001] refer to such a standard as "the criteria of adequacy" of arguments. There is the possibility of degrees (or grades) of conformity (or compliance) in this respect. Some familiar features include:

(1) Validity
(2) Soundness
(3) Cogency
(4) Support strength
(5) Persuasiveness
(6) Triviality

There may be others but these are the common ones, many of which are identified by Fogelin and Sinnott-Armstrong [2001]. Typically, features (1) and (2) apply to deductive arguments whereas features (3) and (4) apply to inductive arguments. However, it is worth noting that features (3), (4) and (5) can apply to *both* argument types. Indeed, I suggest that there are subtle connections between them which can be highlighted through a careful

consideration of cogency as a general basis for formulating and judging the worth of arguments. Thus, to be rationally persuasive is to persuade using reasons, arguments and evidence with some acceptable degree of adequacy or cogency.

4.2.2 Cogency

So far we have critically examined a number of features attributed to reasons. They are attributed to arguments as they are kinds of reasons. But are these features appropriate to arguments in the context of discourse? Some suggest that they are not adequate to the task and highlight the short-comings of (current) formal logic. It is these apparent inadequacies that have given arise to the critical thinking and reasoning and informal reasoning and logic movements. All these difficulties stem from the rise of formal logic which tended to concentrate on deduction, perhaps because it was more amenable to formal treatment in the early development of the discipline. The standard for deduction [Benoit p.59 1992] is:

(1) Propositional certainty
(2) Logical necessity

Perelman [p.1 1969; p.21 1982] criticises the standards for deduction -- necessity, and certainty (or self-evidence) -- with regard to everyday discussion and debate. He states:

> The very nature of deliberation and argumentation is opposed to necessity and self-evidence, since no-one deliberates where the solution is necessary or argues against what is self-evident. The domain of argumentation is that of the credible, the plausible, the probable.

This highlights Aristotle's original account of probable reasoning. The purpose of argument is to assist the advocate in persuading others to adhere to or change their ideas through an acceptable "bond" between premises and conclusion. That "bond" is a basis for some degree of assurance or confidence

in the arguments. Johnson [1987] proposes three conditions of worth for arguments which are *prima facie* convincing and seem to specify the nature of such a "bond". According to van Eemeren and Grootendorst [p.12 1995], they are:

(1) Relevance. The contents of the premises and conclusion are adequately related to each other;
(2) Sufficiency. The premises provide enough evidence (or support) for the conclusion; and
(3) Acceptability. The premises are true, probable or otherwise reliable.

These conditions for argument are apparently general enough to apply to deductive or inductive arguments and cohere with the normative requirements of everyday language use. Of course, there is the possibility that condition (2) and (3) make (1) unnecessary; however, I don't address this concern at this time. Granting the relevance and acceptability of statements, then the "bond" they are looking for comes down to some general notion like support strength or cogency of an argument.

The Nature of Cogency. I have elected to focus on cogency as it is more often effectively used in discourse to describe arguments, grounds and cases than validity, soundness and support strength; however, there is a relationship between these notions which will unfold in due course. To begin, I ask: what exactly is cogency? What I would like to do is critically examine some accounts in brief. Consider what Richards [p.26 1978] advises:

> .....There are two things we need to weigh up before accepting the conclusion of someone's argument:
>
> (a) Are all the premises true [or probable]? and,
> (b) Do all the premises provide good support for the conclusion?
>
> These two questions are generally labeled the questions of the truth of premises and strength of inference, respectively.

Both these features contribute to an argument being good or bad; that is, being high or low on some scale of the worth of an argument. Obviously, I have extended his account to accommodate what are probably true to some degree. By doing so, both features become a matter of degree. Indeed, most of our everyday statements are like this. As to the notion of "strength of inference", it is possible 'to accommodate various argument types. Another account is given by Govier [p.287 1887] who states:

> An argument is cogent if according to standards that the audience would deem on reflection to be relevant, the premises are acceptable and in the appropriate way sufficient to support the conclusion.

Obviously, there is the question of standards. What Govier offers is a general conception of argument worth based on degrees of acceptance and support. Similarly, for Pinto [p.83 2001] the only, if not the main, standard for arguments requires:

> (1) "Acceptability of premisses"; and
> (2) "Suitability of inferential link".

These are not necessarily independent conditions. And this is highlighted by Pinto [p.95 2001] when he states:

> A cogent argument is one that provides good reasons for accepting its conclusion.

Where deductive arguments are concerned, he states:

> Even though an argument should in fact be sound because it has true premisses and is valid, it will fail to be cogent if we have no reason to believe one or more of its premisses.

Where both argument types are concerned, the "premisses must be reasonable to believe". What can be drawn from these and other accounts of cogency is that an argument must satisfy these conditions:

(1) Assurity (or assurance). The degree of assurance of the premises of an argument depends on their acceptance, relevance and uncertainty (or probability in one sense) with respect to some criteria; and
(2) Inferability. The degree of inference or, more precisely, the degree of (inferential) support strength or inferential bond that logically ties the conclusion to the premises of the argument.

Taken together, we may envisage an assurance-inference graph shown in figure 4.1 where each quantity is defined on the interval [0,1]. An argument with a high value falls in a region which is deemed to represent strongly cogent arguments whereas an opposing region would cover weakly cogent ones. Thus, it can be said *prima facie* that an argument is rationally persuasive to the extent that it is cogent. Given that there are degrees of cogency, it is possible to distinguish partial and full cogency. We may suppose that full cogency covers our classical appreciation of deduction and deductive arguments.

Now what I intend to do is critically examine the constituent features of cogency; that is, assurance and inference.

Assurance. The premises from which a conclusion is eventually inferred, is the reason or evidence for the conclusion. What makes them acceptable to an agent? I suggest that, whatever it is, each premise more-or-less contributes to the net acceptance of the evidence on which the conclusion rests. There are at least two familiar features associated with acceptance. They are:

(1) Relevancy. The extent to which a premise of an argument contributes to it being logically possible (logical calculus) to infer the conclusion within the semantic bounds of the available evidence (premise set).
(2) Acceptability (or acceptance). The attitude an agent takes toward a premise. This involves the acceptance-withholding-rejection triad.

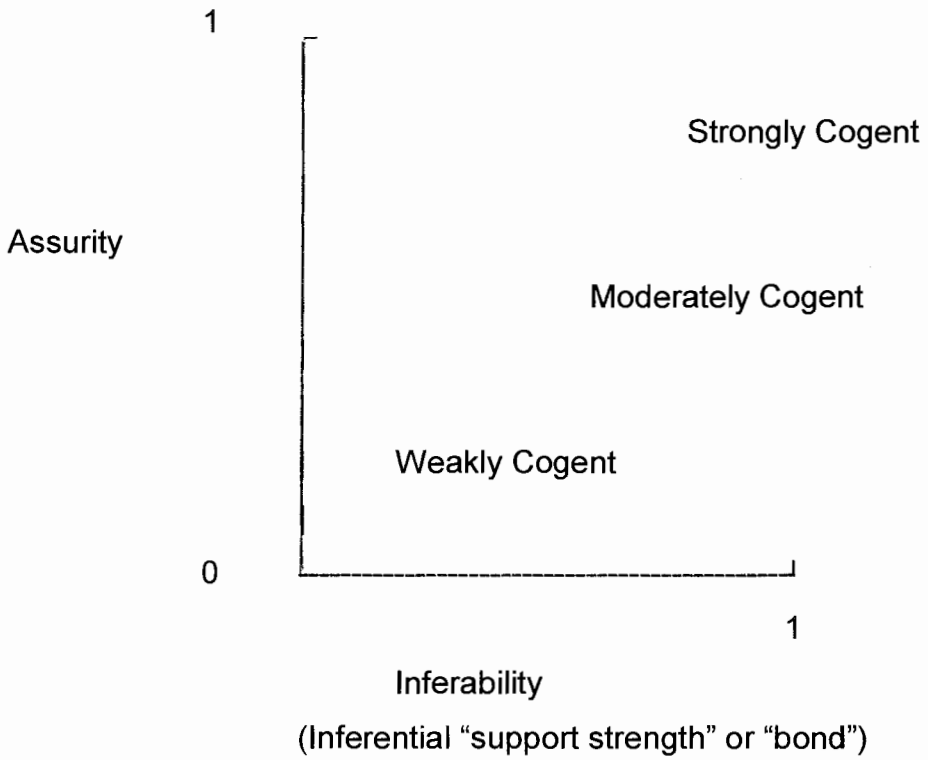

Figure 4.1 Assurance-Inference Space. The cogency of an argument is an acceptance-inference pair where acceptance depends on the relevancy and certainty (probability) of premises; and inference (inferential support strength) depends on the inferential bond tying conclusion to the premises of an argument.

(3) Uncertainty (or probability). The degree of certainty (or probability in some sense) that the premise satisfies (1) and (2) to some extent.

Interestingly, these features can be quantified on the interval [0,1] via (3). My conceptual analysis done in section 3.2.1 of the previous chapter – followed by an account of the OPR-T – gives credence to this view. Of course, it is not immediately obvious -- beyond intuitive judgements at this time – how the respective estimates are made and then aggregated into a net value for assurity of the premises of an argument.

Inference and Logical Calculus. Before discussing inference and the associated context of a logical calculus, I briefly give some attention to the nature of logic. Its natural place in the discourse of mind or community is highlighted by Peirce [1869-1870; pp.350-351 v.2 1984] who puts it this way:

> .....we may state it as a historical fact that logic has been essentially the science of the structure of arguments, whereby we can distinguish good arguments from bad ones, can estimate the value of an argument, can determine upon what conditions it is [logically correct], how it needs to be modified, and what can be inferred from a given state of facts.

This seems to suggest a similarity of form and pattern. Logic is grounded in the mind and its judgement of worth. Dewey [p.135 1920] suggests that there is a resolution to

> ....the dispute whether logic is empirical or normative, psychological or regulative. It is both. Logic is based on a definite and executive supply of empirical material. Men have been thinking for ages. They have observed, inferred, and reasoned in all sorts of ways and to all kinds of results.

Reasoning and inference are natural phenomena. They are cognitive by nature, belong to the intellect and can be examined without recourse to Reason. But why do these capabilities exist? I suggest that we may get an insight into an

answer to this question by reflecting on what Ayer [pp.85-86 1936/1946; p.114 1971] has to say:

> A being whose intellect was infinitely powerful would take no interest in logic and mathematics. For he would be able to see at a glance everything that his definitions implied, and, accordingly, could never learn anything from logical inference which he was not fully conscious of already. But our intellects are not of this order. It is only a minute proportion of the consequences of our definitions that we are able to detect at a glance. Even so simple a tautology as '91 x 79 = 7189' is beyond the scope of our immediate apprehension.

Apart from the obvious, what cognitively distinguishes finite agents from God? Simply, it's something about the expanse of thoughts and thinking. Our thoughts are finite and God's are arbitrarily large or even infinite in expanse. This highlights an essential feature of cognitive architectures (CA). The channel capacity of a CA is not only defined by the speed but also the size of the frames of thought, be they in the form of images or propositions. By using a movie (moving pictures) metaphor we can envisage schemas of thought as a succession of frames or “views” over, not so much a world, but a space of cognitive possibilia expressed in language or sign. The logically permissible frames in this cognitive space demarcate what I consider to be Wittgenstein's [1921] logical space. Suffice it to say at this time, reasoning (which includes inference) occurs in the context of a conceptual space (content) according to a rule space (acts) of "movements of thought" to use Guttenplan's [1996] expression. According to a content-act conception, they conjointly make up a logical space. Thus, it appears that logic is concerned with the logical orderliness of our “movements of thought” in the context of constrained possibilities of mind when we are reasoning about things. From this structured state-space account of finite intelligence, it is clear that the use of arguments – as patterns of reasoning in logical space – can highlight rational preferences amongst the possibilities arising in the discourse of a dispute. Having given a natural account of logic generally, I turn my attention to inference and logical calculi in this order.

In the first instance, consider inference. As Barnhart [p.525 1988] points out, the meaning of inference as “draw as a conclusion” is first recorded in More’s [1529] *A Dialogue Concerning Heresies* and then later in Hooker’s [c.1595] *Ecclesiastical Polity* as “a conclusion drawn from facts or statements”. Furthermore, the general applicability of “inference” is recognized by the OED [pp.256-57 V 1933] in stating that “inference” is

> to bring in or ‘draw’ as a conclusion; ..... to derive by a process of reasoning, whether inductive or deductive, from something known or assumed; to accept from evidence or premisses; to.....conclude.

Similarly, today we are inclined to say that the premises are the evidence for inferring a conclusion from them. This applies in the classically recognised deductive-inductive dichotomy of reasons and arguments. Correspondingly, there is a classical recognition of inference types. For example, in *Deductive Logic*, Fowler [III. i p.70 1869] distinguishes two kinds of inference as follows:

> In any inference, we argue either to something already implied in the premisses or not; if the latter, the inference is inductive, if the former deductive.

Of course, this only applies to good inferences. He then goes on to distinguish immediate (single premise) and mediate (multiple premises) inference. As cogency encompasses different patterns of reasoning, it is necessary to at least intuitively recognize that the “strength” of the evidence for the conclusion varies. According to Richards [p.26 1978]:

> The strength-of-inference.....[is] about the strength of the bonds that tie conclusion to premisses.

Alternatively, Pinto [p.120 2001] offers an account in terms of “support”. He states:

> .....What are we to make of the claim p supports q? I submit that the only clear sense we can give to the notion of “support” is this one: P supports Q means that the inference from P to Q is a good one. ..... [That is,] we

> must.....decide whether the reasoning that leads from P to Q is good reasoning.

This and other definitions make use of the notion of support. For lack of a word in currency, I'm using "inferability" which is based on "infer able, -ible" [OED p.257 V 1933] for the degree of the strength of an inference or even inferential bond; or, simply, degree of inference. Each argument – or the inference schema (rule) that underwrites it – has an associated logical support strength for the inferential bond that ties the conclusion to the premises. We may envisage, based on the prior accounts of support, that support strength is in the interval [0,1].

Clearly, from all that has been said here on logicality, there are now two senses of "support" that have to be recognized in disputes where arguments occur. They are:

(1) Logical support. The premise-conclusion relation in an argument; and
(2) Dialectical-rhetorical support. The claim-argument relation in a dispute.

Intuitively, both make sense. Consider sense (1). If an agent can infer the conclusion from the given premises then the premises logically bolster or lend support for the conclusion in the argument. A support strength can be estimated for the inferential bond between premises and conclusion. All arguments exhibit this. Now consider sense (2). An agent can produce an argument which supports a claim in a dispute. A (rational persuasive) support strength can be used to estimate the support basis for having confidence or believing in the claim. As proof methods in mathematics show [Bloch pp.63-69 2000], not only are there direct arguments there are indirect ones like proof by contradiction, proof by *reductio absurdum* etc. This distinction is not necessarily confined to deductive and can apply to non-deductive arguments as well. Whatever the kind, they in one way or another offer dialectical support to the claim. It just so happens that with direct arguments the claim and conclusion are identical

whereas with indirect arguments they are non-identical statements. Clearly, we may ask: are the two support senses related? Most likely they are because rational persuasion fundamentally rests on the logicality – logical coherence – of those rational appeals called arguments. As I proceed, I suspect the support-support connection as shown in figure 4.2 can be better understood through a deeper understanding of cogency.

Now consider logical calculi. Every logical calculus fundamentally rests on a notion of inference and other logical operations and relations. To specify logical calculi, not only must we identify the manner in which people reason in discourse – that is, cognition and conversation – we must identify what is logically correct. In doing so, it is possible to identify good patterns of reasoning.

The view of logic that is behind my account of cogency is grounded in the mental logic movement. That movements recognizes its debt to Gentzen. The natural deduction of Gentzen [p.68 1964] suggests a pragmatic approach to all logical calculi. He states:

> The formalization of logical deduction, especially as it has been developed by Frege, Russell and Hilbert is rather removed from the forms of deduction used in practice in mathematical proofs. Considerable formal advantages are achieved in return. In contrast, I intend first to set up a formal system which comes as close as possible to actual reasoning. The result was a “calculus of natural deduction”.

His approach is a shift away from the Hilbert-style axiomatic systems to one which, though formal, is more natural in the way mathematicians actually go about their business.

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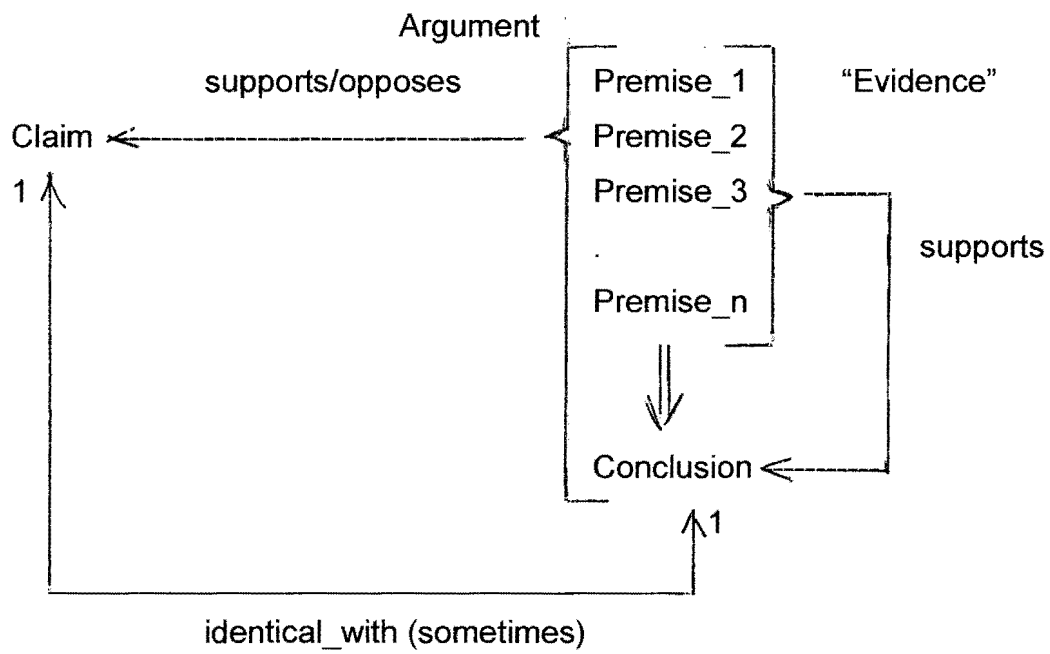

Figure 4.2 Support-Support Connection. There are two notions of support where arguments occur in the discourse of disputes. They are the dialectical support of the claim-argument relation and the logical support of the premise-conclusion relation.

Bonatti [p.17 1998] describes Gentzen's naturalistic approach as follows:

> He noticed that in actual mathematical reasoning, appeal to formal axioms is rare, whereas many – but not too many – forms of inferences are used. He set himself the task of specifying those inferences. ..... [Thus, he] provided rules for all the logical connectives, even if they were logically redundant. These are technical reasons for it, but..... [he] intended to provide a system as close as possible to actual mathematical reasoning, and from this point of view economy in rules could not be a value in itself. ..... [Furthermore,] if we use [equivalences] when following a path of thought, if they appear to govern the functioning of certain special words lexicalized even in normal natural language, such as "and", "or", "if", or "all", then they are likely to correspond to separate units of meaning and they deserve a place in a system of mathematical reasoning.

Thus, Gentzen showed that patterns of reason, even proofs, can be at once "formal and natural" in character. What I'm interested in is a natural logic – or a unified system of natural logics – which is based on an analogous but more general approach to that of Gentzen's natural deduction. This is tantamount to a generalization of natural inference that can accommodate different types of patterns of reasoning in discourse.

Still, my focus is on a working tentative logical calculus appropriate to opinions but especially claims. A many-valued logical calculus based on probabilities (as measures of relative un/certainties) and which is consistent with the OPR-T or CPR-T may go something like this. A logical calculus L consist of:

(1) A set of propositional forms p_1, p_2, ...

(2) A set of truth values T={ +1, 0, -1} based on sign.

(3) A set of probability values P such that p [0,1].

(4) A set of operations O: and, or, not, if_then.

(5) A set of inference rules R such that for a rule i is $i(p_1, p_2, ..., p_n) = p_{n+1}$

(6) A set of reliability measures r [0,1], one for each inference rule

(7) A set of formula for calculating the probability of the conclusion p(c) from the probability of premises p_1, p_2, ..., p_n under the inference rule r. That is, $p(c)=p(r;p_1, p_2, ..., p_n)= x$.

Of all these aspects of the logical calculus, I wish to focus on two of them at this time; the others are much less controversial. Those two aspects are:

(1) Alethic attitudinal uncertainty (or probability); and
(2) Inference

I shall consider each of these factors in turn.

First, alethic probability in a logical calculus. Clearly, the proposed logical calculus requires some kind of many-valued logical system. On the historical origin of many-valued logics, Bolc and Borowik [p.23 1992] notes that: “in more recent times, G. Book, C.S. Peirce (Peirce 1885) and N.A. Vasil’ev (Vasil’ev 1924) have to be considered as pioneers of many-valued logic. Yet, the actual founders of mature multivalued logical systems were (independently) J. Lukasiewicz (Lukasiewicz 1920) and E. Post (Post 1920)”. It is the work by Lukasiewicz that is the staring-point for work on finitely- and infinitely-valued logics. Also, Post’s logical system are “functionally complete, Lukasiewicz’s systems are incomplete” [Bolc and Borowik Intro. 1992]. This may have something to do with Post taking a purely abstract formal approach; and Lukasiewicz being motivated by philosophical concerns with the ontology of human beings, freewill and the causal nature of the world. There are actually two problems surrounding many-valued logical systems. They are:

(1) Truth status. The number and character of truth-states of an opinion or claim; and,
(2) Probability notion. The character and number and of probability states relating to the partial certainty or assurance in an opinion or claim.

Sometimes these two concerns are conflated into one. Whatever the case – and along with the problem of the law of the excluded middle – these problems have been with us since ancient times [Bolc and Borowik Intro. 1992]. Now the probability conception used here (for relative uncertainty) is consistent with the OPR-T for agents. It takes into account the assurance attribute to an opinion or claim. The probability of x is given by:

$$P(x) = p.t \qquad \text{Eq. 4.1}$$

where:

p = the degree of attitudinal uncertainty (or probability) in the interval [0,1]. Probability is an account of partial uncertainty of a claim where the extrema are full uncertainty (doubt) and full certainty.
t = the truth value from the truth values {+1, 0, -1} where the respective values are true (T), undetermined (U) and false (F).

In this approach to probability and truth, they are related but not conflated into one notion; and there is no degrees of truth as such.

Next, inference in a logical calculus. Here, my concern is with the patterns of inference and the inference bond associated with them. First, consider the patterns of inference. For a logical calculus, L, to be of any worth as a whole, it has to consist of parts of worth; that is, good rules of inference. Guided by Gentzen's outlook and the trial-and-error of experience, it is possible to identify good patterns of reasoning which can be the basis of formulating useful rules of inference. Guided by Gentzen's outlook, Bloch [pp.32-33 2000] offers the rules of inference listed in table 4.1 for deductive reasoning in mathematics. Now consider the inference bond. Whether the logical calculus (LC) is well-defined or ill-defined, it is possible to judge the worth of not only inference rules – general patterns of reasoning – but also their LC's according to their logical reliability.

$\frac{P \to Q \quad P}{Q}$	Modus Ponens	$\frac{P \vee Q \quad \neg P}{Q}$	Modus Tollendo Ponens
$\frac{P \to Q \quad \neg Q}{\neg P}$	Modus Tollens	$\frac{P \vee Q \quad \neg Q}{P}$	Modus Tollendo Ponens
$\frac{\neg\neg P}{P}$	Double Negation	$\frac{P \leftrightarrow Q}{P \to Q}$	Biconditional-Conditional
$\frac{P}{\neg\neg P}$	Double Negation	$\frac{P \leftrightarrow Q}{Q \to P}$	Biconditional-Conditional
$\frac{P}{P}$	Repetition	$\frac{P \to Q \quad Q \to P}{P \leftrightarrow Q}$	Conditional-Biconditional
$\frac{P \wedge Q}{P}$	Simplification	$\frac{P \to Q \quad Q \to R}{P \to R}$	Hypothetical Syllogism
$\frac{P \wedge Q}{Q}$	Simplification	$\frac{P \to Q \quad R \to S \quad P \vee R}{Q \vee S}$	Constructive Dilemma
$\frac{P \quad Q}{P \wedge Q}$	Adjunction		
$\frac{P}{P \vee Q}$	Addition		
$\frac{Q}{P \vee Q}$	Addition		

Table 4.1 Rules of inference. A list of some basic standard rules of inference that can be viewed as the logical building-blocks of deductive reasoning [Bloch p.33 2000] conducted in thought or conversation.

Experience can attest that some LC's do the same job better than others. Pragmatically, a LC can be judged on its performance in the context and circumstance of use. A track-record of its success in use by an agent can result in an estimate of its reliability. That estimate is in the interval [0,1] where 1 is 100% reliability or full reliability; otherwise, it is partial reliability. The reliability of argument forms (AF), based on their logical form, depends on the reliability of the logical calculus in which it is formulated. Whatever the nature of the logical schemata used as the building-blocks of AF's, the crucial feature is inference that logically draws a conclusion from the premises. The strength of that relation is called the strength of the inferential bond which ranges in the interval [0,1] where 0 is no strength and 1 is full strength. All values are partial strengths. This is reasonable and plausible to suggest that reliability of the LC and any AF formulated according to it is the extent to which reasoning successfully leads to the right conclusion. For instance, a true conclusion is correctly drawn from the premises in accordance with LC then the LC and the inferences are reliable. Hence, as a measure of the logical support strength of the inferential bond, a reliability measure can be used. Rules of inference are best conceived as, to use an expression of Staines, "reliable patterns of reasoning". Though Staines [p.47 2001a] defines reliable patterns of reasoning for deductive arguments, I present it here in general form:

> A reliable pattern is a pattern of sentences expressing arguments with the following attractive property: every sequence of sentences that fits the pattern expresses a [logically trustworthy].....argument. What is attractive about this is that if we know that a pattern is reliable and we can see that the sentences expressing the argument fit the pattern, then we know that there is a [logically trustworthy].....argument expressed by those sentences.

He adds that "an unreliable pattern is only a pattern that is not reliable"; it is a pattern we ought "not to trust". Ones which suffer from equivocation are examples. It is possible for an argument to have an unreliable pattern and still be logically correct. Finally, the use of LC involves the formulating and evaluating of reasons and arguments. There are different approaches. For deductive arguments, truth-tables are often used. As for inductive arguments it's

not so clear-cut, though it is possible to specify the argument form – which may unknowingly suffer from missing premise/s. In spite of the rigours of formulating a method, controversy still prevails. However, a generalisation of Gentzen's outlook can accommodate different kinds of reasoning. In *Proof & Fundamentals*, Bloch [pp.32-33 2000] alludes to this approach. Though his focus is on deductive reasons, implication, proofs and an alternative to truth tables; I wish to highlight its generality. In doing so, I have taken advantage of Bloch's account by substituting "inference" for "implication". Thus, Bloch advises:

> If we want to show that a complicated [inference] holds, perhaps we could do so by breaking it down into a collection of simpler [inferences], taken one at a time. If the simpler [inferences] are already known, then they could be building-blocks for the more complicated [inference]. [The] standard simple [inferences] that we use.....[are] rules of inference.

Not only do these rules guide us in reasoning and arguing, they offer a standard by which to evaluate reasons and arguments presented in thought and conversation. Clearly, the set of inference rules ought to at least be simple, useful and comprehensive so that they can be readily put into effect in formulating, analyzing and evaluating arguments that come an agent's way.

Dilemma of Dual Certainties. Up to now I have critically examined the two aspects of cogency: the OPR-T and logical calculi. Further reflection reveals that there is a dilemma that arises from the use of cogency. I call it the dilemma of dual certainties. As direct arguments and the support-support connection show, there are now two ways of determining the alethic uncertainty of a claim. They are:

(1) Uncertainty via cogency. Cogency is used for (persuasive) support strength based on an agent's evaluation; and via the OPR-T which regulates the agent (or group), the alethic uncertainty for the claim is determined.

(2) Uncertainty via a logical calculus. The calculus used to guide reasoning and inference with respect to the premises of an

argument includes a sub-procedure for "carrying forward" the certainties of premises to the conclusion.

Clearly, then, an agent is left with a dilemma. Which certainty estimate should one use? If a system of opinions or claims is coherent – with respect to the O/CPR-T and logical calculus – we may suppose that whatever way we go the certainty estimates will be (roughly) the same in the end. However, where the system is incoherent due to poor, incomplete, etc. understanding; it is reasonable and plausible to expect that the estimates of certainty are likely to differ. What then are we to do? I propose to use cogency. There are some good reasons for doing so, which I shall now put forward.

There are different cognitive styles, amongst the agents of a community, at work in any dispute. This is so irrespective of agents operating according to Reason or otherwise. Hence, it is prudent for an agent to critically assess any argument presented to them in a dispute according to its own system or an agreed one. It is familiar to be privy to a dispute where someone offers compelling, even convincing arguments in favor of a position on an issue. They may even call it a proof -- and then declare that this is why they feel the claim is (absolutely) certain and they feel likewise confident in themselves. However, we may judge otherwise. If they are sincere, then they hold their logical calculus in high regard. They may even point to their impeccable use of logical rules in a tried-and-true logic. Still, we aren't as convinced as they are. We may have more doubt as to the acceptability of premises or the reliability of the calculus in use. Thus, *in lieu* of a common ground of reasoning, it is prudent not to accept the degree of certainty (or probability) their logical calculus assigns to a conclusion on the basis of their reasoning. We must "stand back" and see it for what it is: one of many systems of reasoning competing in a marketplace of ideas and principles available to guide our thinking and reasoning about things. Clearly, some are going to be better -- that is, more reliable (say) – than others. Thus, we ought to determine for ourselves the uncertainty of a claim based on our own estimate of cogency (as the support strength) and the OPR-T available to us at the time. After all, the argument or even the case is a rational appeal;

and therefore the onus is on us to determine how much it really appeals to us in our current understanding.

Broadly, there are two aspects to the context of the claim and its associated arguments. They are:

(1) The graph of the OPR-T or CPR-T of the agent or group.
(2) The logical calculus used by the agent or group.

If we view this context as a "web of belief" [Quine and Ullian 1970] then we defer to a conceptual holism; that is, the inter-dependencies of conceptual schemata. A change in any schema within a belief system impacts on other schemata. This suggests the possibility of conceptual dependencies between aspects (1) and (2) above under change and revision. I agree with this outlook; and it has important implications. Ideally, under a complete and proper understanding, the two certainty estimates should be co-ordinate. The estimated or calculated cogency of the argument with the OPR-T and the calculation used with the logical calculus should lead to the same alethic probability of the claim under consideration. Realistically, we don't have a complete understanding nor do we have coordinate context of the OPR-T and the logical calculus for a topic or for the totality of understanding. So, what are we to do? The upshot is that we have two support strengths and two corresponding un/certainties or probabilities associated with the claim. Ultimately, the one we want is the probability to be assigned to the claim.

Estimation of Cogency. Given that cogency is the way to go, how then should we go about determining its value? A proposal can be inferred from what has been stated so far. The required support strength for the OPR-T may be given by:

$$c = s_p = a.r \qquad \text{Eq.4.2}$$

where:

c = the cogency of an argument or case

s_p = the (rational persuasive) support strength

a = the net assurity/assurance of the premises based on a probability measure

r = the reliability of the logical pattern (or calculus)

Both net assurity and reliability can be estimated in the interval [0,1]. As this specification suggests, cogency is taken to be the measure of the (net) persuasive support strength of an argument (or case) in the discourse of a dispute, which involves opposing positions in a conversational contest of persuasive strength. With this value, the uncertainty (or probability) of the opinion or claim can be determined using an equation or read from a graph of the OPR-T that is currently in use by an agent, group or community. For convenience, I assume the graph is available for inspection.

Still, there are estimation problems associated with these features. I shall briefly comment on them now. First, consider the assurance of the premises of an argument. To recall, this includes both acceptance, relevance and certainty (probability) requirements. We may ask: To what degree am I rationally assured of the acceptance and relevance suggested by the reasoner; or should I determine this for myself? The explication of an estimation method is not clear, apart from alluding to a so-called rational intuition. As I see it, that is to say there is a subliminal method at work. Now consider the reliance on an argument (or pattern of reasoning). Using an instrument metaphor, an argument form can be treated as an instrument or device with a reliability measure. Without going into details at this time, it may be based on a track-record of performance in various contexts and circumstances. This is critically discussed in the next chapter. Taking both assurity (as indicated by probability or uncertainty) and reliability into account, what this proposed estimation does is give us a basis for appropriate marginal values which can contingently arise in association with an agent's strategic deployment of arguments – if not appeals generally – in a dispute. These marginal values – of the support strengths of arguments – are either increments, decrements or no value contributions to the net support

strength of the case of an agent's position in relation to those of other positions in the discourse of a dispute.

But why use cogency? It is useful because it applies to arguments generally; and therefore marginalise the deduction-induction dichotomy and the problems of inference, that is, the problem of implication and the problem of induction. This controversy associated with these difficulties is apparent in Bunge's [p.23 1999] attempt to deal with the aforesaid distinction. He states:

> [An] argument [involves]....reasoning (valid or invalid) from premises to conclusion. The only valid arguments are deductive. Validity depends exclusively on [logical] form. Thus "All melons are virtuous; this is a melon; hence this melon is virtuous" is formally valid. Regardless of their validity, arguments can be fruitful or barren. If invalid yet fruitful, they may be called seductive. Example: a statistical inference from random sample to population. Nondeductive arguments depend on their content. Hence the project of building inductive or analogical logics is wrongheaded. The study of nondeductive arguments belong in cognitive psychology and epistemology, not logic. Analogical and inductive arguments, however suggestive, are logically invalid.

Here, I cite Bunge merely to highlight these difficulties and some of the stances taken with respect to them. At the very least, the use of a cogency notion enables us to conveniently bypass these philosophical concerns in relation to the practicalities of discourses. It is not necessarily a radical challenge to philosophical attempts to address these concerns. First, consider the deductive-inductive dichotomy. Agency applies to each argument type. What is required is that logical schema are available to evaluate an argument's conformity to a logical standard or norm. Also, what is required is a calculus to determine the aggregate attitudinal uncertainty of opinions (or probability where they are claims) that make up the premise so that an uncertainty can be assigned to the conclusion. Suffice it to say that I uphold deductivism like Popper [1963], though not necessarily his version. Ultimately, I expect that inductive arguments will be shown to be enthymemes i.e. deductive arguments with missing or suppressed premises. Until this is shown to be the case, cogency applies to all arguments. At the very least, arguments are regulated by a logical calculus characterized as a many-valued truth-based logic that utilizes some notion of degrees of

probability. And second, the validity and soundness of deductive arguments and the support strengths of inductive arguments can fit with cogency. This can be achieved by a generalisation of validity and soundness. Validity rests involves judging if an argument complies with some logical standard. Also, an argument is sound if its valid and all the premises are true. Generalising this notion involves the generalised validity notion and that the premises have some (preferably high) level of alethic uncertainty or probability. In this way, an approach to generalising validity and soundness can cohere with the cogency notion developed here.

Overall, in rational persuasion, the worth of arguments is best judged by cogency. Cogency recognizes the assurance-inference contribution of reasoning as a basis for strengthening a position (one possibility) in relation to other positions (other possibilities) in the context of critical discussion or debate. Ideally, there is a conceptual harmony between an agent's OPR-T and the logical calculus that regulates argumentative activity in discourse. Factors to do with context and circumstance may more-or-less have an impact on their character. In a debate, each agent brings to bear its own rational regimen – based on its applied OPR-T and logical calculus – that guides the generation and evaluation of arguments. A community of agents may make moves to establish a common ground on this matter. The use of cogency for judging the worth of an argument or case obtains even when indirect arguments occur, conceptual disharmony exists in mind or there is no coherent common ground amongst agents.

4.3 Discussion and Debate

Let's look closely at the criticism corner of the structure in figure 4.3. I shall refer to appeals and, unless otherwise stated, I include arguments. Notice that appeals can be directed at topics, issues, claims and even appeals and arguments. They are supporting (ie. for, pro) or opposing (ie. against, con) the target according to some basis. The word which readily comes to mind is "criticism".That basis can only be some intellectual value system of the agent.

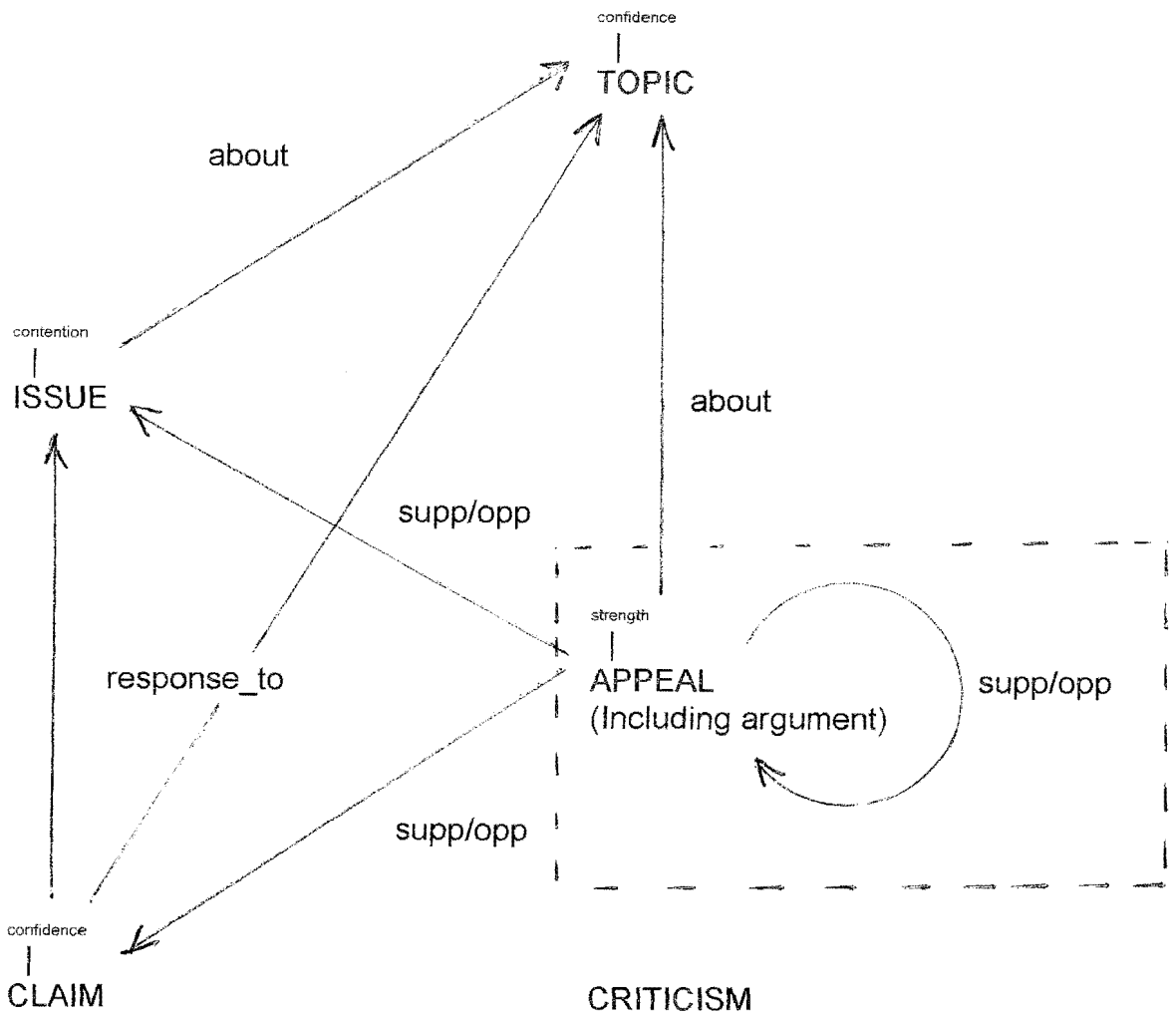

Figure 4.3 Universal Argumentation Scheme. An abstract conceptual scheme for argumentation in disputes. It is abstracted from the discourse of disputes. The topic refers to the context in relation to which issues, opinions (including claims), appeals (including arguments) are expressed. Appeals support or oppose opinions or other appeals.

Hence, support and opposition has a fundamentally critical nature that relies on the value system of the agents involved in the dispute. Through support and opposition of a position, agents accept or reject (not accept) issues, claims, appeals/arguments etc. with some level of confidence. At this time I rely on an intuitive appreciation of acceptance and rejection. Later, I critically examine these quite general notions in more detail; and their relation to commitment and belief.

4.3.1 Criticism

Fundamentally, disputes in discourse are all about having some worthy critical basis for accepting, withholding or rejecting something that arises in discourse. This is the view (and process) of criticism. The OED [pp.31 IV 1989] records the following account of "criticism" and its associated linguistic forms:

> The action of criticizing, or passing judgement upon the qualities or merits of anything; esp. The passing of unfavourable judgement; fault-finding, censure. .... The art of estimating the qualities and character of literary or artistic work; the function or work of a critic. ..... An act of criticism; criticizing; a critical remark, comment; a critical essay, critique.

Some definitions are more specific and relate to literary works, antiquarian texts and the critical philosophy of Kant etc. There is also mention of critical theory. It is associated with members of the Institute for Social Research at Frankfurt (the Frankfurt School) and is concerned with producing "dialectical critiques of society".

Criticism has an historically well-recognised contentious character. In one of his lectures from *Discourses*, Reynolds [Lect.II 1774] states:

> We never are satisfied with our opinions, whatever we may pretend, till they are ratified and confirmed by the suffrages of the rest of mankind. We dispute and wrangle for ever; we endeavour to get men to come to us when we do not go to them.

The importance of a contest of strength with regard to opinion and claims is promoted by Mill [1859; 1898]. Most of Mill's views in this respect can be found in *A System of Logic* and *On Liberty* wherein he proclaims and defends "the liberty of thought and discussion". Mill [p.481 1898] notes at the start of his account of arguments and fallacies, "a maxim of the schoolmen". It declares:

> Contrariorum eadem est scientia.

He translates this as:

> We never really know what a thing is unless we are also able to give a sufficient account of its opposite.

Mill goes on to say that a "philosophy of reasoning" ought to deal with "bad as well as good reasoning". Equally, in applying the aforesaid maxim, that we can only critically appreciate a position on an issue in the light of some opposing position. For example, consider alethic inquiries. Mill [Pref. p.vi 3rd ed. 1898] puts it this way:

> [Where] truth on.....subjects is militant, [it].....can only establish itself by means of conflict. The most opposite opinions can make a plausible show of evidence while each has the statement of its own case; and it is only possible to ascertain which of them is in the right after hearing and comparing what each can say against the other, and what the other can urge in its defense.

By "militant" I suspect he means "controversial" or "contentious" or their cognates. In his article on Mill's empiricist outlook, Landesman [p.255 1997] succinctly captures Mill's account of the contesting of opinion. He states:

> The only way to be sure.....[about our ideas] is to enter the marketplace of ideas and engage strenuously with criticisms. ..... Even if it turns out that one's belief is true and is free from all error, it does not follow that our holding it is rational in the absence of discussion [and debate]. A necessary condition for our belief to be rational is that we know what can be said against it, and we are able to refute criticisms offered by those who hold contrary views. Furthermore, in the absence of critical

> discussion, beliefs turn into dead formulas, and their meaning fails to be understood.

Clearly, criticism is central to the development or evolution of opinion and claims. Dascal [pp.147,148 1998] puts it this way:

> Controversies are indispensable for the formation, evolution and evaluation of.....theories, because it is through them that the essential role of criticism.....is performed. ..... For controversies are the natural "dialogical context" where theories are elaborated and where their meaning progressively crystallizes.....

through discussion and debate. This view arises from Dascal's attempt to articulate the human aspects of scientific controversies.

What is required is some general appreciation of critic, criticism, and critique. Regardless of the context or situation, what is implicated by judging, evaluating or assessing something is some critical basis; that is, some value system. Ethics is not the only province of values. According to an axiological appreciation of values, they infuse intelligence, mind and action. Such an approach is taken by Rescher [1969] in *Value Theory*. I concur with this outlook. The application of value systems in discourse is called criticism. The critic produces a critique of the target of its criticism. It is concerned with the worth of the target. That worth is concerned with the goodness/badness, rightness/wrongness, correctness/incorrectness etc. of what is the focus of an agent's or parties interest. Each agent or party is attempting to persuade others -- and perhaps affirm in themselves -- to accept something and reject something else. This orientation is summarised by the following schema:

P: X is worth accepting/rejecting because it is supported/opposed by Y.

where:

P = Position

X = Issue, claim, appeal, argument, ground or case.

Y = Appeal, argument, ground or case.

The intellectual value system of the agent is expressed through some discursive unit Y. It is the value-laden basis for accepting or rejecting X. This is apparent in the previous figure 4.3. Clearly, such criteria have to be underwritten by some system of intellectual values. It is the basis for the acceptance or rejection of a position and its claim in relative to some issue.

How then is criticism enacted in critical discussion or debate? The social exchanges of disputes, including critical discussion or debate, have a strategic character based on opposition, persuasion and usually Reason. Zarefsky [1989; 1996] takes a critical-strategic perspective on public speech, discussion, debate etc. It emphasizes the open contingent decision-theoretic nature of discourse. There are good and bad strategic and organizing principles; however there is no "all-purpose magic formula" to guide an agent's actions. If anything, all the actions of the agents involved are subject to "constraints and opportunities" [Zarefsky p.382 1996] of discourse. According to Zarefsky, such an approach to dialectics, rational or otherwise, may be called strategic criticism. What form does strategy take? In keeping with Zarefsky's work, strategy is expressed through language use and fundamentally takes the form of appeals and arguments in the context of a contentious conversation. Hence, I'm inclined to refer to this general approach as argumentative strategic criticism. As figure 4.3 shows, the targets of argumentative strategic criticism are issues, claims and appeals/arguments themselves. Only criticism which centres on a claim for a position is shown.

4.3.2 Argumentation

I now focus on the argumentative-strategic character of criticism in debate. There is an analytic trend in using some "argumentation scheme" to diagrammatically represent discussion and debate. But what exactly are argumentation schemes? The notion of "argumentation scheme" (AS) is open to at least three interpretations.

One account is due to Johnson [pp.237-39 1996] who attempts to construct a conceptual map for describing critical discussion or debate as a whole. This conceptual map is a theory of Reason, which includes argumentation. Indeed, my own structural diagrams, which appear intermittently throughout this thesis, are piecemeal attempts to achieve the same outcome. Given the compass of Johnson's conceptual map, arguments and argumentation can only be one aspect of it. Hence, its focus is not specifically on arguments. According to Freeman [Pref. P.xi 1991], in *Dialectics & the Macrostructure of Arguments*, the structure of arguments can be construed in two useful ways. He distinguishes between the micro- and macro-structure of arguments. The micro-structure is concerned with the structure of an argument, which is in sympathy with the traditional focus of logic. A well-regarded approach to diagramming the logical structure of arguments originates with Beardseley [1950] in *Practical Logic* (previously *Thinking Straight*). This nascent approach was developed by Thomas [1973] in *Practical Reasoning in Natural Language*. The macro-structure of arguments is concerned with the inter-connection of arguments as they are used by agents in critical discussion or debate; hence, it is a dialectical concern. Freeman includes the inter-connection of sub-arguments within an argument; however, I'd be inclined to allocate that concern to micro-structural considerations as I think it is essentially a logical one. Clearly then, the micro-structure of arguments is about the various patterns of argumentation in critical discussion or debate. As such, I'm inclined to consider an argumentation scheme is a strategic pattern of arguments in discourse.

An early example of an argumentation scheme, it would appear, is the one proposed by Toulmin [1958] in his *The Use of Argument*. He takes the view that formal models of logical reasoning are of little use in everyday discussion and debate. For Toulmin there are no universal norms across different fields of knowledge, only situated standards. Consequently, he attempted to develop an argumentation scheme, as shown in figure 4.4, which he considered more suited to everyday use. In conversation an argument is used to establish a claim.

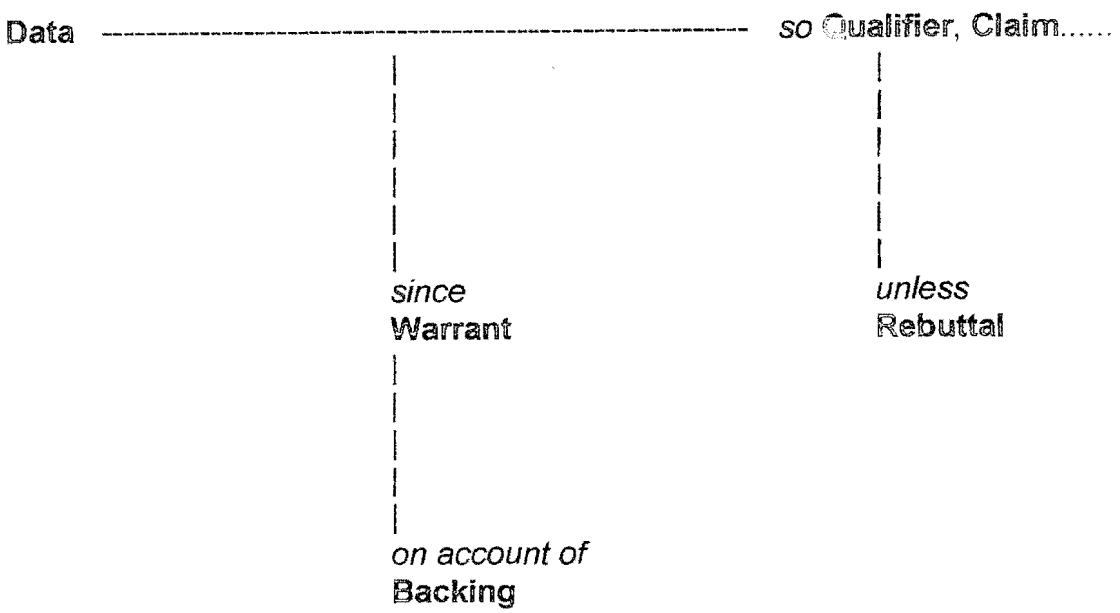

Figure 4.3 Universal Argumentation Scheme. An abstract conceptual scheme for argumentation in disputes. It is abstracted from the discourse of disputes. The topic refers to the context in relation to which issues, opinions (including claims), appeals (including arguments) are expressed. Appeals support or oppose opinions or other appeals.

A claim may be supported by an argument which consists of: data which is the background information for the claim; a warrant that argues for the claim on the basis of the data; a backing of the warrant that gives authority to the claim; a rebuttal which gives the condition(s) under which the authority of the warrant would be set aside; and a qualifier of the claim which indicates the degree of confidence of the claim based on the data in relation to the warrant. This model emphasise the relationship between claim, data (or evidence), warrant, rebuttal, qualifiers and backing. This structure is a sophisticated pattern of argument(ation). More often, in my view, we see its components appearing as moves in argumentative dialogues. If anything, it counts as an argumentation scheme that shows how these moves are related to each other.

I propose an argumentation scheme which, like its predecessors, is based on the legal arena as the guiding paradigm. A precis of the importance of notions like argument and argumentation in law is given by Fogelin and Sinnott-Armstrong [pp.419-458 2001]. In their account they discuss concepts like fact, argument types, standards, burden of proof, case, evidence, preponderance, decision-making, *ratio decidendi* (the reason for the decision), precedent and *stare decisis* (adherence to previous decisions). By way of a jurisprudential metaphor and an appreciation of the language of public debate, I generalise some of these notions in developing a universal scheme for argumentation. The main notions include: issues, claims, shared assumptions (common knowledge), argument, evidence, challenge, objection, backing, reply, rebuttal, concession etc. along with some of the previous notions from the legal arena. There is, however, a need for a term to cover the aforesaid items which are common to the discourse of dispute. I have elected to call them “discursive units” for lack of an existing term. Apart from such categories, there are also relationships. The support-opposition dichotomy of appeals and arguments is fundamental to discussion debate. Appeals and arguments are the critical basis for forming or changing an attitude to a thing; that is, for accepting, withholding or rejecting an issues, claim, appeal, argument etc. Overall, these insights are summarised in what I call the universal argumentation scheme (UAS), which is further elaborated for appeals in figure 4.5.

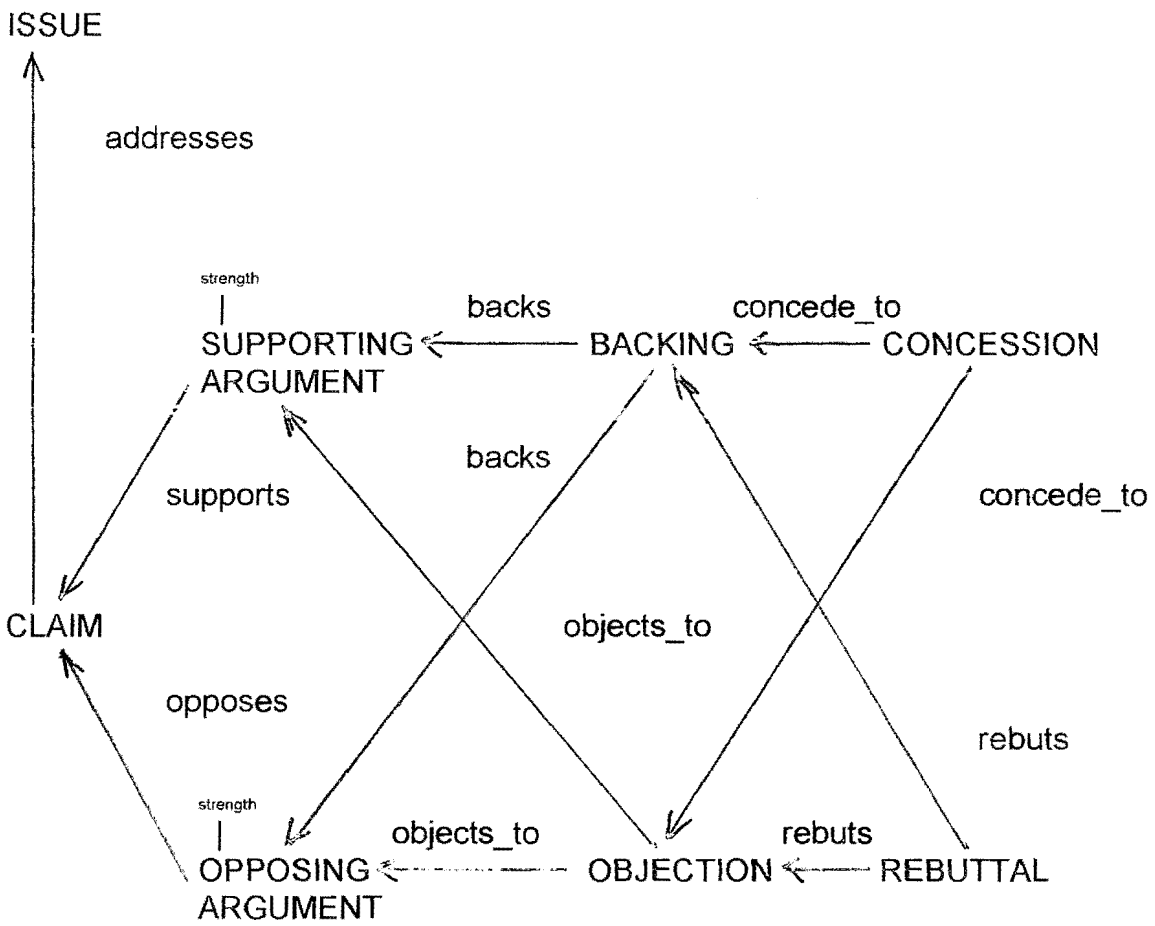

Figure 4.5 The Critical Corner of the UAS. The basic argument forms that impact on an agent's attitude and associated uncertainty for an opinion or claim. Though not shown, they apply to other aspects of the UAS. Technically, this structure is a space in which a trajectory for an agent's pattern of argumentation in discourse can be defined.

Essentially, it is an abstract "synopsis" of our understanding of disputes over issues of controversy. Toulmin [1958] offers an AS but doesn't think there is a universal AS which applies to all fields of knowledge. I'm inclined to think there is one. And I propose that it is the UAS or something like it. Furthermore, it is decomposable into a much richer structure as I will show in what follows.

Pro and Con. The CAS highlights the pattern of pro and con in argumentative activity. As courts of law amply show, agents representing different positions mount offensives against each other and defend their positions. There is a tradition of conceiving disputes, or the cases strategically developed within them, as *pro et contra*; that is, for (pro) and against (con) a position or claim. The OED [pp.533-534 XII 1989] characterises "pro-and-con" as follows:

> ..... For and against: in favour and in opposition; on both sides. ..... Pl. Reasons for and against; reasons, arguments, statements, or votes on both sides of a question. ..... to weigh the arguments for and against; to debate both sides of a question.

According to Sparkes [p.122 1991], "pro and con" are attitudinal concepts. On this point he states:

> Arguments pro and con something are *arguments for* it and *arguments against* it. ..... Attitudes pro and con are attitudes favourable and unfavourable. To have a pro-attitude towards X is to be favourably disposed towards X; to have a con-attitude towards X is to regard X unfavourable.

The notion of *pro et contra* suggests that, just as with arguments for and against a claim, it is possible to distinguish two aspects to a case. The case of a position can be analysed into 2 parts:

(1) The case for a claim p. This includes supporting, defending arguments etc.
(2) The case against a claim q. This includes opposing and attacking arguments.

Sometimes the cases are not made, only the suggestion that they can be made. Typically, the expressions then used are “arguable” and “debatable”. Sparkes [p.233 1991] characterises an arguable case as follows:

> If someone says 'It is arguable that p', his audience is to draw the conclusion that, though he is not prepared to commit himself to asserting p, he believes that a strong case can be made in favour of p.

No public commitment is made, though there is a supporting case, which can be made in relation to claim p. As for a debatable case, Sparkes goes on to offer the following account:

> If someone says 'p is debatable', or 'It is debatable whether p' (N.B. 'whether'), his audience is entitled to draw the conclusion that, though he is not prepared to commit himself to denying p, he believes that a strong case can be made against p.

Again, no public commitment is made, though there is an opposing case which can be made in relation to claim p.

Where arguments are prominent over mere appeals in the argumentative activity of disputes, then the reasoning involved is characterised as defeasible reasoning (according to philosophy) or “non-monotonic reasoning (according to AI). Finnis [p.181 1995] offers the following account of defeasibility. He states:

> A defeasible property, relation, or judgement is subject to defeat (nullification, termination, or substantial revision) by further considerations (e.g. later facts or evidence).

He points out that the notion of defeasibility was introduced into English law by Hart [1983] but he later abandoned it. In spite of this, the notion has been sustained and applied in legal philosophy, epistemology and semantics. In philosophy, a focus on defeasible reasoning is due to Chisholm [1957; 1966; 1977] and Pollock [1987a,b; 1989; 1991; 1992] whose early papers appeared in the period 1960-1980.

Support, Opposition and Strength. What is fundamental to the critical corner of figure 4.5 are the relationships of support and opposition in debate. Appeals or arguments can be used in support and opposition of some discursive unit like an issue, claim or even other appeals or arguments. But what does it mean to support or oppose something?

First, consider support. On this, the OED [pp.258 XVII 1989] defines "support" as follows:

> To endure without opposition or resistance; to bear with, put up with [or] tolerate. ..... To back up a statement or opinion. ..... To furnish authority for or corroboration of a statement etc.; ..... To second or to speak in favour of a proposition, or one who makes a proposition; to maintain or contend for the truth of an opinion, etc.

The term "support" has a variety of meanings. Generally, it is concerned with endurance, tolerance, maintenance etc. My focus is on "support" as it relates to dispute in discourse. Appeals and arguments can be used to support the acceptance or rejection of some discursive unit.

Now consider opposition. On this, the OED [pp.868-869 X 1989] defines "opposition" as follows:

> ..... The action of placing one thing in contrast with another; the condition of being opposed or contrasted; contrast, contradistinction, antithesis. ..... The contrast of positions or arguments; a contrary position or argument; a proposition opposed to a thesis, counter-proposition, objection.

The term "opposition" has a variety of meanings relating to relative astronomical positions, logical relation of propositions, antonyms etc. My focus is on "opposition" as it relates to critical discussion and debate in discourse. Appeals and arguments can be used to oppose the acceptance or rejection of some discursive unit. Finally, as previously discussed, both support and opposition of some discursive unit can be measured by persuasive support strength. This is possible as there is an equivalence of "support against" and "opposition". For instance, to give support against p is to oppose p.

Both support and opposition are given strength ratings according to some schedule of strengths, especially in coordination with the agent's or group's OPR-T. Here. I critically examine the relationship between support, opposition and their respective strength values. People tend to speak of support in slightly different ways. Consider these schemes:

(1) Argument X supports (to some degree) claim p.

(2) The premises $p_1,p_2,.....,p_n$ of argument X support to some degree conclusion p_{n+1}.

Do they assert the same thing? Perhaps "support" is being used in slightly different ways or (1) is merely a short paraphrase for (2). I can't see any convincing reason to make a distinction so I'm inclined to say that one is the paraphrase of the other. This notion originates from attempts to deal with the class of inductive arguments. It is based on an intuitive "good reasons for" feature of inductive -- even deductive -- arguments in accounting for their validity. Good reasons give sufficient support for a claim. Technically, it has become known as degrees of support (strength). By analogy with partial functions in mathematics, I take the class of fully supported arguments (deductive) to be a proper sub-class of partially supported arguments. The notion of persuasive support strength offers us a convenience.

There are long-standing contentious issues which I call the problems of inference. For example, there is the problem of implication and the problem of induction. There are associated difficulties in tying inferences to the truth of the premises and conclusion in truth tables, which were suggested by Wittgenstein [1956]. The notion of support strength gives us a unifying notion which is psychologically appealing and a pragmatically coherent approach to logical forms irrespective of argument types. Indeed, it is possible to re-define validity and soundness for each argument type in terms of support strength. Obviously, support strength can be used to measure the support of an (appeal or) argument, be it for a claim or even other (appeals or) arguments. *Prima facie* their support has a positive value. But what about opposition? In contrast, is

there an opposition strength? Maybe. But we don't normally observe people expressing themselves in this way. As far as I know its always about persuasive support strength. Here, we have to look to language use for assistance. Consider these expressions:

(1) Argument x for a claim p vs argument y against a claim p.
(2) Argument x is in favour of claim p vs argument y is not in favour of claim p.
(3) Argument x supports claim p vs argument y opposes claim p.
(4) Argument x is for p vs argument y is against p.

These expressions are familiar and appear to be semantically equivalent, though (2) arguably offers weaker expressions. And therein lies a clue. Option (4) shows us that we can express opposition in terms of support. That is to say:

support_against = opposition_to

Thus, a generalised support notion that prima facie allows for positive and negative support of an opinion or claim. Simply stated, there are different ways of supporting an opinion or claims. Suppose, for example, I present two arguments in relation to claim p. I recall the 1940's radio spoof by Orson Welles that caused regional panic in the USA. Let p be: "Martians have invaded the Earth!". Argument A supports claim p and argument B opposes it. In other words, argument A is "support for" p and argument B is "support against" p. Given this, it makes sense to talk of support strength only. Hence, as per the example, argument A has a positive (+) support strength whereas argument B has a negative (-) support strength. One concern might be the use of support strength in relation to appeals. That's why I cautiously included them via brackets. However, I am prepared to say that I have no concern with using this notion for appeals as well. I think the concern has to do with language use in the tradition of Reason and rationality. Usually, support and support strength are applied to reasons, arguments and cases. As other appeals are made, presumably, on the basis of unreason or non-reason eg. passions, interests etc.

they don't have support strength because they don't meet the criteria of adequacy for arguments. However, they do have persuasive strength. Hence, terms like "support" and "support strength" are precluded in language use relating to them. I think such a position is narrow-minded if not pedantic. I grant that they do not necessarily meet the criteria of adequacy. But there is a sense -- albeit a more abstract one -- where appeals can support or oppose an opinion or claim. And, quite frankly, such a view coheres with my experience of discussion and debate. The notions of support, opposition and support strength have a more general sense which goes beyond the confines of the class of arguments. Later, I return to this point and argue that the persuasive strength of an appeal and the support strength of an argument are semantically similar; and that where Reason is concerned we can speak of rational persuasion as Schopenauer [1860], Sorenson and others do.

Offence and Attack. Arguments are often described as attacking (offending) or defending a position. These are terms typically associated with the contest of interests in politics, law, the military and, quite frankly, the everyday business of life. This commonality of language use is due to what I previously referred to as a combat metaphor. It has led to an appropriation of terms and expressions related to fights, battles and war; and thereby contributes to the conceptual unity of conflicts generally. Here, I wish to critically explore the nature and inter-relationships of the various argument forms as shown in the previous figure 4.5.

First, consider the class of offensive arguments or attacks. The OED [pp.724 X 1989] defines "offence" (usually "offense") as follows:

> A stumbling-block; a cause of spiritual or moral stumbling; an occasion of unbelief; doubt, or apostasy. ..... The action of attacking or assailing; attack, assault..... Hurt, harm, injury, damage. ..... Feeling of being hurt, painful or unpleasant sensation, pain. ..... The act or fact of offending, wounding the feelings of, or displeasing another; usually viewed as it affects the person offended; hence, offended or wounded feeling; displeasure, annoyance, or resentment caused (voluntarily or involuntary) in a person. ..... The condition of being regarded with displeasure; disfavour, disgrace. ..... The fact of being annoying, unpleasant, or repulsive; offensiveness. Something that causes

> annoyance or disgust; an offensive object, quality, feature, or state of things; a nuisance.

More specific usage relates to military action; and breaches of law, obligation, norms or standards. One might expect the entry for “offence” to parallel that for “defence”. However, it doesn’t quite do this; nor is there a specific entry relating to discussion or debate. Still, the sentiment is readily applicable to them. How then do they relate to opposition? Clearly, an argument can oppose the claim of another position. But an argument can also oppose supporting arguments of that position as well. Either way they can be described as offensive or attacking. What this suggests, as far as I can make out, is that the class of opposing arguments and the class of offensive arguments are the same.

Another class of arguments are defensive ones. Traditionally, the defence of a position against its critics is called Apologetics. Historically, it originates with the apologists in 2 A.D. This is “the name given to those Church Fathers whose principal role lay in defending Christianity against paganism, against the state and against Greek philosophy [Reese pp.20-21 1980]. The practice became known as apologetics. According to Mautner [p.24 1996], apologetics is concerned with “defence against adverse criticism. The word is often used for defence of religious beliefs and for the branch of theology concerned with this defence”. For example, in theology it involves attempts to rationally justify the divine origin of faith.

However, the term “defence” (sometimes “defence”) is used in a number of contexts such as the military, games sports, the study of minds as well as critical discussion or debate. That is, where there is a contest or conflict in or between agents. Essentially, it applies to actions which involve guarding, protecting or resisting attack or repelling attack. My focus is on meanings related to discussion and debate for which the OED [p.375 IV 1989] states:

> ..... The defending, supporting or maintaining by argument; justification, vindication. ..... a speech or argument in self-vindication.

What is also relevant is the specific entry for law. The OED states that the meaning is allied to those used in other contexts. The original is given first, the next one have impacted on its meaning and the last is the technical account. Thus, "defence" is:

> The action of warding off and of prohibiting. ..... The action of keeping off, or resisting the attack of (an enemy).
>
> The action of guarding or protecting from attack. ..... Guarding or protecting from attack; resistance against attack; warding off of injury; protection. (The chief current sense.). ..... Faculty or capacity of defending. .....
>
> [In Law] the opposing or denial by the accused party of the truth or validity of the complaint made against him; the defendant's (written) pleading in answer to the plaintiff's statement of claim; the proceedings taken by an accused party or his legal agents, for defending him.

Clearly, defence is about resistance or protection from attack; and where arguments are concerned this is a contribution to support. But how exactly are they related to support? So far we have identified arguments that support claims. But what we have seen is that supporting arguments can come under attack from objections. We may respond to that objection with a rebuttal which is a way of supporting one's argument. This is a defensive move in response to an attack. Hence, the class of defensive arguments is a proper sub-class for a given position. Unlike for opposing and offending arguments, the two classes are *not* the same.

Argument on Argument. Clearly, arguments can be used to attack or defend other arguments sometimes in rather convoluted ways. Here, I wish to critically examine this in more detail.

First up , consider objection and its opposite. The OED [pp.642-643 X 1989] defines "objection" as follows"

> The action of objecting, or stating something in opposition to a person or thing. That which is objected, a statement made in opposition; a charge or accusation against a person (Obs.); an adverse reason, argument, or

> contention..... Now often in weakened sense: An expression, or merely a feeling, of disapproval, disagreement, or dislike (esp. In phr. to have an (or no) objection), to take objection: to bring forward a reason against something, or merely to state one's disapproval of or disagreement with it; to object. ..... a document in which an objection is stated.

Where discussion and debate are concerned, objections are attacks on the argument/s of an opposing position. This is clearly apparent in Law, parliamentary debates and other discourses.

It is possible to say and argue something positive or supporting about an argument, especially those belonging to one's own position. What are such arguments called? The ND [p.195 Christ 1943] proposes the following synonyms and antonyms for:

> *Objection*, Protest, scruple, difficulty, obstacle, barrier, doubt.
>
> *(None given)*

No antonym was given but the synonyms point to another source. Of those given, "protest" seemed best suited to the context of dispute. For "protest" the ND [p.222 Christ 1943] proposes the following:

> *Protest*, v.n., Maintain, declare, asseverate, assert object, demur, remonstrate, avow, testify, attest, expostulate. N., declaration, asseveration, assertion.
>
> (*Sanction*)

Thus, if we are not objecting to an argument we might say we are sanctioning it. The OED [p.441 XIV 1989] defines "sanction" as follows:

> To ratify or confirm by sanction or solemn enactment; to invest with legal or sovereign authority; to make valid or binding. ..... To permit authoratively; to authorize; in looser use, to countenance, encourage by express or implied approval. ..... To allege sanction for; to justify as permissible. ..... To enforce (a low, legal obligation, etc.) By attaching a penalty to transgression. ..... To impose sanction upon (a person), to penalize. .....

But this doesn't seem entirely appropriate. Under "support" in ND [p.268 Christ 1943] the entry is:

> *Support* v.a. Forward, further, help, assist, patronise, back, aid, second, favour, advocate, abet, befriend, uphold, encourage, succour, promote, guard, protect, defend, prevent.
>
> *(Oppose)*

The word "back" reminded of another word used in discussion and debate that might do the job. The entry in ND [p.25 Christ 1943] for this word is

> *Back[ing]* v.a. Aid, assist, abet, second, help, support, countenance, favour.
>
> *(Hinder)*

This suggests a support which "backs up" an existing one. The OED [pp.866-67 I 1989] defines "backing" as follows:

> The action of supporting at the back. ..... Collective appellation of that which backs, or forms a back, rear, or hinder part. ..... Support, succour; a body of supporters.

As the OED points out, it derives from "back" which has various senses, some relating to horse-riding, printing, photography etc. In sum, that's what we might expect from the opposite of objection. A backing affirms or adds more support to an appeal or argument already given in critical discussion or debate.

Next, consider rebuttal and its opposite. In a critical discussion or debate, a reply may be made to an objection or backing. That reply is either a rebuttal or something else. First, consider rebuttal. The OED [pp.306 XIII 1989] defines "rebut" and "rebuttal" as follows:

> To assail (a person) with violent language; to revile, rebuke, reproach. .... To repel, repulse, drive back (a person or attack). ..... To foil or deprive of (a thing) by repulse. ..... To force or turn back (a thing, ...); to give a check to. ..... To repel or reject. ..... Refutation, contradiction.

Apparently, this term is more closely tied to the law rather than other contexts or disciplines. On this point, it states:

> To repel by counter-proof, refute (evidence, a charge, etc.). Hence, in general use: to refute, disprove (any statement, theory, etc.)

Associated terms include rebutment (the act of rebutting), rebuttable (can be rebutted) and rebutter (that which rebuts). In a law report [West Publ. p.898 v.202 1925] from the *North Western Reporter*, it is stated:

> Rebuttal evidence properly is that which explains away, contradicts or otherwise refutes the defendant's evidence 'by any process which consists merely in diminishing or negativing the force of' it.

The term "evidence", as I shall discuss later, is sometimes short for "evidence-based argument". Irrespective of the use of "evidence", a rebuttal is about diminishing the impact of arguments. They don't have to be just objections, they can also be backings. Furthermore, It is possible to "give into", to fold as in a card game. But what is this called? The ND [p.230 Christ 1943] offers the following synonyms and antonyms for "rebute":

> Rebut, Confute, meet, disprove, repel, rebuff, retort, oppose, refute, answer.
>
> (*Accept*)

One familiar term under "accept" that accords with experience is "to concede" a point. The OED [p.659-660 III 1989] defines "concession" as follows:

> The action of conceding, yielding, or granting (anything asked or required). ..... Admission of a point claimed in argument; acknowledgement of the validity or justice of a proposition or idea.

Apparently, "concession" applies to a claim *in* an argument. However, I think that we are entitled to apply it equally to the argument especially when a compelling objection or backing is given.

Justification and Refutation. These terms appear to mark arguments (or grounds) with particularly strong (net) persuasive support strengths; however, it is not clear that they amount to a proof. The OED [pp.328-329 VIII 1989] defines “justification” and “to refute” as follows:

> The act of justifying or showing something to be just, right, proper; vindication of oneself or another; exculpation; verification, proof;..... An apology, a defence.

In law, it is defined as:

> That showing or maintaining in court that one had sufficient reason for doing that which he is called to answer; a circumstance affording grounds for such a plea.

In both definitions, “strong” words are used. Hence, we are entitled to infer that a strong supporting argument for a claim is called a justification; and demonstrations where reasons and arguments are deductive in nature.

Also, there is the opposite of justification or contra-justification. Usually, it is called a refutation. The OED [pp.496 XIII 1989] defines “refutation” and “to refute” as follows:

> The action of refuting or disproving a statement, charge, etc.; confutation. .....
>
> To prove (a person) to be in error, to confute. ..... to disprove, overthrow by argument, prove to be false: a statement, opinion, etc. ..... To demonstrate error. ..... Sometimes used erroneously to mean “deny, repudiate”. .....

Again, the word expresses strength. Hence, we are entitled to infer that a refutation is an argument (or case) which strongly argues against, even disproves, a claim. Some common examples of argument forms which are refutations are: “that’s just like arguing.....”, counterexample and reductio ad absurdum arguments.

4.4 Positions, Grounds and Establishment

Argumentative activity in a dispute gives rise to aggregations called ground and case along with associated higher forms called establishment and proof. These notions are critically examined in turn. As a ground (or case) is strategically developed according to a schedule of support strengths. Consequently, the value of its weight (net support strength) changes as does the corresponding net certainty (or probability) for the claim in keeping with some OPR-T. With reference to the OPR-T for an agent or group, it is shown how a ground or case can attain the status of an establishment or proof as specified by some standard.

4.4.1 Ground, Case and Weight

Usually, in legal circles, court-cases aren't settled by one item of evidence or by one knock-down or bulletproof argument. Each side, the prosecution and defence, have to develop a case in support of their position. As for everyday critical discussion or debate, I think a similar requirement is sometimes expected by others. Furthermore, other notions like weight, establishment, proof and preponderance come into play. Hence, I critically discuss these notions and their application in everyday language use.

Ground. Previously, I argued for a distinction between appeals and arguments. Given the greater latitude for appeal forms in everyday life it seems that the notion of case used in legal circles is too restrictive unless it's generalised. The alternative is to find another term; and in that endeavour I elect "ground". With reference to the context of debates in discourse, the OED [pp.875-882 VI 1989] defines "ground" as follows:

> ..... A circumstance on which an opinion, inference, argument, statement, or claim is founded, or which has given rise to an action, procedure, or mental feeling; [in short,] a reason, motive. Often [it involves an] additional implication: A valid reason, justifying motive, or what is alleged as such. .....

Other meanings relate to the bottom of things eg. sea, well, ditch, vessel, Hell etc.; the foundation of an edifice eg. building, bridge etc.; the fundamentals of a branch of knowledge; a prepared surface; the surface of the Earth etc. In sum, there is the impression of a basis or foundation for supporting something. Thus, when applied to appeals it is any mental basis whatever its origin or form which directly or indirectly supports or defends. Though the entry alludes to classical proof-like qualities eg. validity, there is really no necessary requirement of rational norms or standards. I think this is appropriate because there are appeals which people submit to, consciously or otherwise, that are not acceptable under some if not all positions on the primacy of Reason and rationality. Realistically, such appeals have to be taken into account whatever one's position. In referring to a ground as a mental basis, what is meant by this? To appreciate it, it is necessary to view the ground for an opinion or claim in the context of discourse. An agent may become involved in a debate at any stage in a discourse on an issue of controversy. It may do so through reading articles, attending seminars and conferences or just conversing with colleagues. Through time it is exposed to and perhaps even thinks up various appeals, arguments, backings, objections, rebuttals etc. The accumulative impact is a ground with an overall persuasive impact on the agent or audience.

Weight of Evidence. In Law there is an, albeit intuitive, notion of accumulated persuasive impact called "the weight of evidence". Presumably, each piece of evidence is assigned a persuasive support strength in relation to the probability of the truth of the claim. For instance, Jack is accused and charged with murdering Jill in what seems to be an unfortunate accident while collecting a pale of water from a well. Indeed, Jack claims it was an accident and that he did not murder Jill. His defence attorney bolsters this claim by presenting evidence-based arguments in support and defence of this claim. Throughout the court proceedings, the aim is to develop a case with a weight of evidence that the jury considers meets the standard of proof (SOP). Many other court-cases like this one have a similar strategic outlook. What is of interest here is the notions of "support strength" and "weight of evidence". I intend to generalise these notions so they apply to any ground or case. A ground consists of various appeals,

some of which are arguments and argumentative strategic patterns of arguments (or argumentative patterns) that arise in critical discussion or debate. The weight of a ground or case is an aggregation of the ±strengths of appeals, arguments and strategic patterns thereof; the result is a net persuasive support strength. The strengths of arguments and even argumentative patterns is based on cogency, which is additive. Though expressed differently, this was appreciated by Bentham [pp.18-19 1838] in his recognition of:

(1) The “degree of probative force [of].....the mass of evidence”.
(2) “The aggregate force of the evidence”.

The aggregated probative force of the total evidence arising in discourse is essentially some net rational persuasive effect or what is referred to here as net persuasive support strength. Though I have taken liberty in the use of his expressions, it is nonetheless consistent with his whole account of persuasion, probative force and evidence. On one occasion, Peirce [pp.705-718 v.12 1878; CP. p.420 Ch.7 v.2 1911-1958] offers a similar, more detailed account while critically discussing what he refers to as “materialistic and conceptualistic views of probability”. He suggests how to aggregate the impact of arguments on belief as follows:

> The rules for the combination of independent concurrent arguments takes a very simple form when expressed in terms of the intensity of belief, measured in the proposed way. It is this: take the sum of all the feelings of belief which would be produced separately by all the arguments *pro*, subtract from that the similar sum for arguments *con*, and the remainder is the feeling of belief which we ought to have on the whole. This is a proceeding which men often resort to, under the name of balancing reasons.

On another occasion, he [Peirce CP. P.82 v.1 1911-1958] refers to “..... the weight of reasons pro and con”. Also, Keynes [p.vii 1921] refers to “the weight of arguments”. A similar approach is taken here. Thus, the net persuasive support strength is given by:

$$s_{net} = \sum_{j}^{i+1} (\pm c_i) \qquad \text{Eq.4.3}$$

where:

s_{net} = the net persuasive support strength of a case.

c_i = the cogency of the ith argument or argumentative pattern.

i,j = indices.

Presumably, the agent or group has a schedule of argument forms from which to obtain values so as to determine the cogency of arguments arising contingently and strategically in discourse. Having obtained the net persuasive support strength of the ground or case, the graph of the OPR-T for the agent or group can be used to determine the net attitudinal uncertainty or alethic probability of the opinion or claim respectively of a given position.

Rationality, Weight and Case. Given the notion of ground, it is conceivable that a ground may consist for the most part only of arguments. This is the kind of ground preferred by those who uphold the primacy of Reason and some notion of critical objectively rationality. Such grounds are looked upon favourably in mathematics, science, law, medicine etc. A notion which is or at least comes close to being a rational ground is the notion of case used in law. The term “case” has various meanings like a happening to someone, an instance or an occurrence of a thing; even an infatuation between two people, a state of affairs, enclosure etc. What is of interest here are those meanings relating to critical discussion and debate. On this, the OED [p.934 II 1989] defines “case” by reference to the law. They include:

> The state of facts juridically considered. (a) A cause or suit brought into court for decision. (b) A statement of the facts of any matter sub judice, drawn up for the consideration of a higher court. (c) A cause which has been decided: leading case, one that has settled some important point and is frequently cited as a precedent. .....
>
> The case as presented or ‘put’ to the court by one of the parties in a suit; hence, the sum of the [appeals or arguments] on which he rests his claim. Also, fig. as in to make out one’s case, a case. .....

> An incident or set of circumstances requiring investigation by the police or other detective agency. .....

Of the three entries, it is the second one which I focus on. This entry would be familiar to many people due to the public exposure of court proceedings through the media. Indeed, the first and third entries relate back to it. Thus, a rational agent who participates in the debate, is concerned with developing a case i.e. a rational ground. This development may occur, wholly or partially, before and/or during disputation. What does the development of a case involve? Though Whately [Ch.2 1846] doesn't refer to a "case" by this word, he does suggest what it involves when he says that the proper task of persuasion involves "the finding of suitable arguments to prove a given point, and the skilful arrangement of them.....". Apparently, this arrangement refers to familiar and regular argumentative patterns that strategically arise in conversation and that may have an impact on persuasion generally.

At this point, the relationship between appeals and arguments on the one hand and ground and case is implied by the commuting diagram in figure 4.6 in the next section. Arguments are a proper sub-type of appeals just as cases are a proper sub-type of grounds. Furthermore, a ground consist of appeal forms which may include some arguments; and cases consist of argument forms alone (or for the most part). A persuasive strength is assigned to both appeals and arguments whereas a net persuasive strength is attributed to a ground or case.

4.4.2 Establishment and Proof

Establishment and proof are names given to special kinds of grounds and cases respectively. Behind the notion of establishment and proof, there is a recognition that it is rationally not preferable to carry out thoughts and actions based on opinions or claims with arbitrary uncertainty. Rationally, particularly on a pragmatic basis, it is better to carry out actions informed by opinions or claims which meet an acceptable level of attitudinal uncertainty determined by the net

support strength of its ground or case. The ground for an opinion or claim might be:

(1) No ground (i.e. no appeals, arguments etc.).
(2) Poor (or bad) ground.
(3) A good ground that is equal to or greater than the ground of any relevant counter-opinion.
(4) A good ground that equals or exceeds the condition of establishment/proof better than the ground of any relevant counter-opinion.
(5) A supreme ground that equals or exceeds a very high threshold condition for establishment/proof where no other ground for a counter-opinion does so.

Generally, these seem to be the possible grounds (or bases) for opinions or claims. It suggests a scale of worth or goodness for grounds whatever they might be. The range of options is ground conditions under which opinions or claims may inform actions. We are not always aware of the grounds. For better or worse, sometimes they are due to innate propensities, upbringing, indoctrination or deliberation. Ideally, one would want to only act on opinions or claims that are established or proved. The difficulty is rightly “drawing the line” so we can do this under the right constraints of time, effort, monies etc. For example, where peoples’ lives are concerned, the importance of the right standard of proof in courts of law is clearly important. If Jack is found guilty of manslaughter rather than murder, there is a different impact on his life. He may have to serve a long custodial sentence or capital punishment. Many other court-cases can be major turning-points in people’s lives. And many medical cases, especially those which could be life-threatening highlight the importance of standards of proof. However, the business of life regularly pressures us for timely decision and action. Hence, the next best condition is to act on the best available opinion or claim with the best available ground. This allows for a range of possible opinion conditions down to having no ground at all; that is, the groundless belief. Where there is no ground or case then an agent is acting on

mere opinion. Sadly, this may be all an agent has. Here, I critically discuss the notions of establishment, proof and their associated standards.

Grounds and Establishment. When the purpose of dispute was critically discussed in section 4.1, establishment was argued to be a winning outcome of persuasion. Here, I re-iterate what I previously stated to some extent. Sparkes [pp.215-216 1991] offers a different view in discussing argument. He states

> There are two characteristic aims of argument:
>
> (1) To establish a conclusion as worth believing or a prescription as worth following; and
> (2) To persuade the audience.
>
> Sometimes, however, an argument may establish without persuading or persuade without establishing.

The persuasive aspect is called eristic whereas the establishing aspect is called thetic. Sparkes contrasts eristic with the (early) dialectics but, quite rightly, recognises that this last term “is an appallingly ambiguous word”. Hence, I have elected to use “thetic” which is in keeping with establishment. As argued in section 4.1, persuasion is the driving-force of dispute. Therefore, it has to be our starting-point. Thus, establishment is generally achieved though persuasion. It doesn’t make sense to say the ground establishes without persuading. Establishment marks a turning-point *in* persuasion where an agent, having considered all the arguments pro and con, is convinced that an opinion is true, right, good etc. With reference to the opinion-persuasion relation with thresholds (OPR-T) or CPR-T, this makes sense. The threshold may be viewed as a benchmark of establishment. Thus, when the weight of the ground results in the uncertainty of the opinion meeting or exceeding the benchmark, then the agent is convinced and forms a commitment or conviction.

Case, Standards and Proof. Angeles [p.245 1992] defines “proof” as “....a process that establishes (provides firm evidence or complete justification for)” an alethic opinion or claim e.g. “ a truth or a fact”. That is, proof is a rational establishment for inquiries into the truth of the matter. I think this is

fundamentally right. I'll come back to this point as I critically examine the notion of proof.

On first reflection we tend to associate proof with mathematics. This is a narrow view that is not aware of the historical facts of the tradition of proof whereas a wide view reveals more. An immediate fact that widens our vista is that a "standard of proof" is used in law. Indeed, the classical understanding recognises different types of proof based on contestable considerations of inference and alethic (un)certainty. With this in mind, one can begin to see proof conditions not only in mathematics and law but also in science, medicine, other disciplines and everyday life. Here, I critically discuss the tradition of proof in both classical and modern times.

Historical entries in OED [pp.1463-1465 VIII 1933] show that it is a term which has been used for many centuries and its meaning has been rather stable. Proof is defined as:

> That which makes good or proves a statement, evidence sufficient (or contributing) to establish a fact or produce belief in the certainty of something. ..... The action, process, or fact of proving, or establishing the truth of, a statement; the action of evidence in convincing the mind; demonstration. .....

Other meanings are peripheral to the above; or belong to special usage which has to do with the production of armour, books, hats, instruments etc. However, even in such dealings one can detect analogues of the above relating to "the condition of having successfully stood a test, or the capability of doing so; [that is, having a] proved or tested power". Intuitively, this account reveals at the essence of proof.

There has been a tradition of proof that recognises different types based on the reasoning distinctions made by Aristotle [384-322 BC]. Indeed, proof notions can be identified in the works of Descartes, Hobbes, Spinoza, Locke, Mill and others. It is apparent in this account of proof by Baldwin [p.359 v.II 1901]. He states:

> An argument which suffices to remove all real doubt from a mind that apprehends it. It is either mathematical demonstration; a probable deduction of so high probability that no real doubt remains; or an inductive. i.e. experimental, proof. No presumption can amount to proof. ..... The entire psychological machinery of reasoning is the instrument of proof. The verb prove means to produce adequate proof, which may be either ' direct' or ' indirect,' according as the proof process consists or not of the direct application of a rule or statement to a particular case coming under it.

A proof is a ground or case that is so good that it permits little or no margin for uncertainty (or doubt). This is roughly the kind of certitude used in mathematics; however, in law more latitude is given, though the proof condition is still high. The different types of proof in the classical understanding are explicitly identified in the account given by Grooten and Steenbergen [p.346 English trans. 1972]. They state:

> The reduction of a thesis to previous and better-known truth. While an .argument is looking for a new truth, starting from the previous truth, proof is a judgment of a new, not yet established truth,' by reducing it to the previous truth. In deductive proof.....the middle term functions as means of proof; in induction a sufficient number of cases are the means of proof. In classical logic, we distinguish: demonstration (certain proof), dialectic (probable proof) and paralogism (fallacious proof).
>
> The aim of a proof is to deduce, according to laws, a thesis from theses (which are already proved). In a broader sense it can also be used to indicate proofs of deduced rules.

One can take issue, which I do later on, with their use of notions based on the deductive-inductive dichotomy and recommend they use “inference” as a less committed covering term. Still, their proof distinctions concur with the chart of inferences given by Wueller [pp.142-143 1966] for scholastic philosophy.

From this account, there are proof notions based on demonstration, probable reasoning and fallacy discussed by Aristotle [384-322 BC] in the *Art of Rhetoric*. Proof based on demonstration was used by Euclid [c.300-260 BC] in his work *Stoicheion* (translated as *Elements*). Later on, the Euclidean-inspired deductive certitude of mathematics was taken by Descartes [1641] as a paradigm for all disciplines. The claims of any discipline or the totality of claims of all disciplines

is allegedly deducible from a finite number of basic truths (or axioms) known with certainty. According to Martinich [pp.97-98 1995], Hobbes, a contemporary of Descartes, recognises different proof types in his writings. This is evident in various contexts where he critically discusses the existence of God. Divine existence can't be demonstrated (through a syllogistic turn) "but this does not mean that there cannot be proofs, based upon reasoning from the best available evidence and adequate to merit assent. Thus, belief (in the existence of God) is supported by reasoning without being demonstrative". Proof based on probable reasoning (which may be deductive-like or otherwise), along with the axiomatic approach, is used by Spinoza [1677] in *Ethics*. Strictly speaking, though inspired by Descartes, his proofs are not demonstrations even if they are treated as such. At best, they are strongly convincing arguments which accord with a less restricted notion of proof.

A more recent contribution is due to Gastev [pp.610-612 v.8 1975]. He recognises that ".....the term 'proof' allows [for] a number of interpretations that differ from one another in degree of generality and definiteness". The account given alludes to strict and non-strict notions of proof. Sparkes [pp.176, 220 1991] expresses similar views; and, later on, he states that it is important to distinguish deductive from non-deductive proof. This distinction is endorsed by Ackermann [1966] for inference and argument. Sparkes [p.220 1991] then offers this definition of deductive proof:

> When a logician says 'proof', he usually means deductive proof. Normally, a deductive proof that p is true amounts to this:
> (1) A valid argument with p as its conclusion;
> (2) Its premises are true;
> (3) Its premises are known to be true.

He goes on to define non-deductive proof as follows:

> Proof is sometimes used for non-deductive and therefore non-valid arguments which provide overwhelming grounds for accepting their conclusions. It might be advisable, in philosophical contexts, to avoid this use of 'proof' and use some near-but-not-entire synonym such as 'establishment'.

He then discusses the direct-indirect proof dichotomy and gives some examples. There are two critical points I want to make about this account. One has to do with classification. It's not quite clear how he reconciles the two different classifications of proof. I'm inclined to think they are equivalent distinctions. Essentially, Sparkes is taking up the deductive-inductive dichotomy in his account of proofs. In doing so, he is tacitly taking on board the problems of inference, especially those relating to implication and induction. The other has to do with establishment in relation to proof. "Establishment" is used, I suspect, because it hasn't got the intellectual finality that "proof" presumably has. This finality arises from the absolute certainty of the tradition of deductive certitude in mathematics. Ideally, once you have a proof of a proposition ie. theorem then "its for all time". Granted, some proofs are found to be logically wrong but they are usually corrected and we have a proof once more. Still, this is only because no one else raises technical objections. Though the critics have been silenced, there is still no guarantee of infallible Cartesian certitude. But proof is not always like this. The proofs in law -- including science, in my view -- involve a high level of alethic (un)certainty that we are inclined to treat the claim or theory as good enough to be acted upon just as if it had absolute certainty. Even though we would like it to be proof for all time we can't ever be that sure or that sure about being sure at any rate.

Finally, another proof distinction is associated with the rise of formal logic. It just so happens that with the rise of formal logic deduction, validity and soundness became associated with logical formalism. This is most likely due to their amenability to formal treatment. Along with the growing disillusionment with formal logic into the 20th century, Ryle [1954] proposed a formal-informal distinction to deal with divergent approaches to reasoning and inference. Blackburn [p.306 1994] uses this distinction in his account of proof. He states:

> Informally, [proof is] a procedure that brings conviction. More formally, a deductively valid argument starting from true premises, that yields the conclusion. Most formally, ...a proof is a sequence of formulae of which each member is either an axiom or is derived from a set of preceding

> members by application of a rule of inference, and which terminates with the proposition proved. The final member of such a sequence is a theorem. In 17th- and 18th-century usage 'proof' has the same implications of a chain of intuitive ideas as demonstration.

The formal account relates to proof theory which he mentions and I reiterate here. It is concerned with the study of deductibility among sentences in a formal system or calculus. Deductibility is defined purely in syntactical terms; that is, without reference to the intended interpretation of formal systems as dealt with in model theory. Formal methods inspired by mathematics are not necessarily confined to this context; however, it offers a purely logical account of proof.

Establishment-Proof Typology. Based on the previous accounts, what I attempt to do here is critically develop an establishment-proof typology as shown by figure 4.6 further on. It at once does justice to the tradition of proof but takes a slightly different approach based on a narrow-wide distinction, the OPR-T, the weight of grounds or cases and cogency as a measure of persuasive support strength. I shall do this by critically discussing some issues arising from the prior accounts of proof. The issues concern the establishment-proof dichotomy, the ground-case distinction, the deduction-induction dichotomy, the nature of inference and implication as well as logical correctness.

First, there is the concern over establishment and proof. “Establishment” and “proof” are not the only labels for good highly persuasive grounds and cases. They are used to characterise acceptable standards of certainty; that is, the threshold of satisfaction associated with a OPR-T or CPR-T. Having already examined proof I think it’s fitting to say something about establishment before proceeding further. The OED [pp.298-299 III 1933] defines “establishment” as an

> Established or stable condition; settlement, permanence; also, settled condition of mind, calmness, confidence, ... a means of establishing; something that strengthens, supports, or corroborates.

In these selected usages of the term, there is a focus on the contents and processes of ideation. Here, the ideas can be commitments which includes beliefs. Other usage relates to laws, money and organisations wherein there is a similar sentiment. What is important here is the proof-like character of establishment that is recognised by Sparkes. I accept Sparkes' recommendation that we make a distinction between establishment and proof. Sparkes' simply recommends using "establishment" for non-strict proofs in stark contrast to strict proofs. However, I take a different approach. Rather than disjoint-types, I propose to use top-down types where proof is a proper sub-type of establishment as shown in figure 4.6. The result is a commuting typology. There are good reasons for this. There is a need for a wider proof-like notion to accommodate different appeal-argument mixes and disputes which are not concerned with alethic inquiry, the kind which produces claims, beliefs and knowledge. A sub-type of establishment is rational establishment. Proof is a type of rational establishment for disputes involving alethic inquiry; that is, an inquiry into the truth of things. Thereafter, if it is considered necessary, it is possible to consider sub-types like narrowly-conceived proof (as in mathematics) and widely-conceived proof (as in science and law).

Establishment or proof is not necessarily due to a single appeal or argument. For instance, Tragesser [p.396 1992] observes "a proof is a collection of considerations and reasons that instill and sustain the conviction....." that some claim is (most certainly) true. Essentially, a proof is the case for a claim. This includes the possibility of one appeal or argument; that is, the singleton case. This applies equally to establishments. Therefore, it is necessary to recognise different appeal-argument mixes as the bases for belief. Not all agents are rational agents moved solely by fallible objective critical rationality in thought and reasoning. In the practicalities of economics there is a growing recognition that agent models may be unrealistic. The bottom-line is that there are agents who are persuaded by irrational, non-argumentative moves of their own minds or other agents. I recall the distinction between ground and case made previously and shown in the figure 4.6.

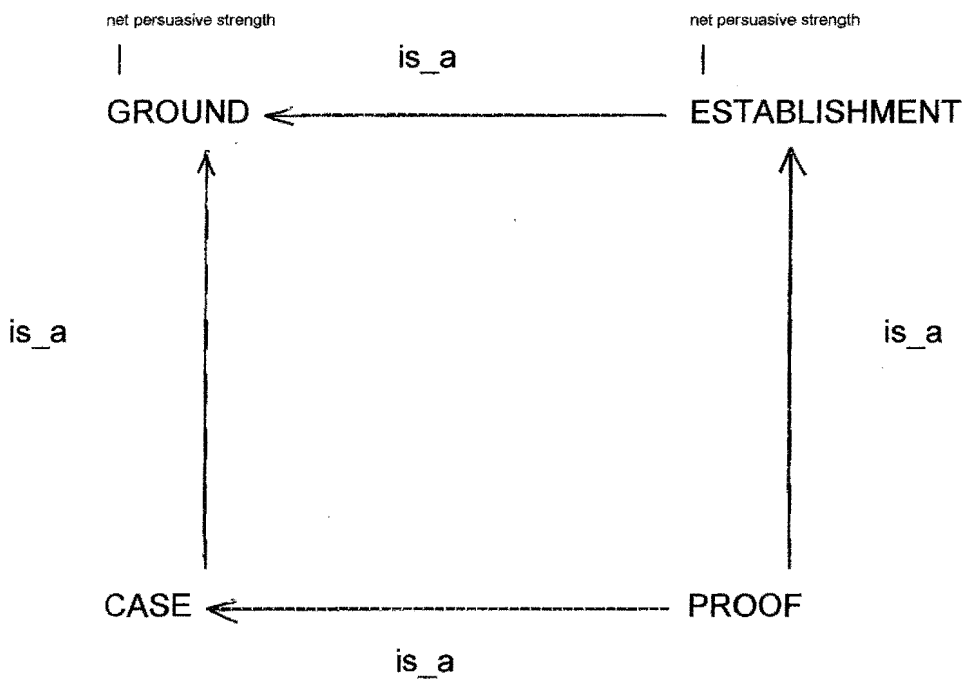

Figure 4.6 Establishment and Proof. Arguments are rational appeals and a proper sub-type of the class of appeals. A ground or case is an aggregation of appeals and/or arguments that strategically arise in debate and over net support for an opinion or claim. A case is a rational ground and a proper-sub-type of the class of grounds. Establishment and proof are respectively a ground and case with a weight that meets or exceeds a benchmark set by an appropriate standard. A proof is a rational ground where claims (alethic opinion) are concerned.

A ground is any appeal basis for a belief developed in discourse whereas a case fully or mainly consists of arguments (and evidence). Given this, an establishment is a highly persuasive ground based on appeals and a standard of establishment; whereas proof is a highly convincing (rationally persuasive) ground or case based on arguments and a standard of proof. As a result, this approach accommodates “proof” used in both mathematics and law – and I add science as well.

Furthermore, The OPR-T, or more especially the CPR-T, can accommodate both wide and narrow notions of proof. What makes a ground of case into a proof is that its weight meets or exceeds a benchmark on the CPR-T, which is specified by an associated SOP. A part of the code of conduct for dispute in discourse is the regimen that regulates appeal/argument forms and patterns, the appropriate CPR-T and the location of benchmarks. All this goes to improving the reliability of an inquiry-based dispute accurately identifying which of the competing claims is true. The different notions of proof are determined at least by the location of the benchmark on a graph of the CPR-T. For a narrowly-conceived proof, the benchmark is located at c 1 for a graph with asymptotes and c=1 for graphs with ceiling-floor pairs. And, for a widely-conceived proof, usually c>>0 and c 1, depending on the graph types previously mentioned.

Second, is the concern over the deduction-induction dichotomy. I shall use the strict/non-strict distinction but not necessarily in the sense of Sparkes. Inductive arguments are typically given as examples of non-deductive arguments. The problem of induction originating with Hume [1739] is not settled; and this distinction may end up as a red herring. Where Stove [1982, 1986] endorses the view that inductive arguments are a new type distinct from deductive arguments (inductivism); Popper [1963] argues, in *Conjectures & Refutations*, that the inherent nature of inference and argument is deductive and that inductive arguments are reducible to them (deductivism). I am inclined to agree with Popper. Furthermore, Scriven, Kahane [1970’s], Johnson [1996] and others challenge the deduction-induction dichotomy. I am sympathetic to such a

position as I think a logical unity is possible. However, I don't need to take up this issue here in developing my account of establishment and proof that is based on the OPR-T or CPR-T. Different argument types – be they deductive, inductive, abductive etc. in nature -- are accommodated by the notion of cogency theoretically developed in the section 4.2.2. It is still possible to make traditional distinctions; however, all arguments (even cases) can be judge according to their cogency.

Third and last is the concern over logical correctness. Deductive arguments are evaluated according to validity and soundness. Given what was said about deduction and induction, it may not necessarily follow that inductive arguments are invalid. Indeed, people such as Naess, McPeek and others have proposed the development of generalised notions of validity and soundness. Until these issues are cleared up, I propose to use a general notion of logical correctness as a basis for logical value judgements. It is then up to an appropriate deductive and inductive logic to specify a notion of logical correctness (or cogency) appropriate to the class of arguments embraced by the logical system. My approach is to use the notion of cogency as a criterion for logical correctness to encompass the currently recognised different argument types. Whatever way the problems of implication and induction are dealt with, I think this dichotomy of arguments will stand under re-definition. Until then, I shall hold to a notion of cogency and a narrow/wide distinction for establishment and proof.

4.5 Deliberation in Debate

In critical discussion or debate, as in any contest of strength, a decision has to be made as to whether or not there is a winning contestant or victor. This is crucial to dispute resolution. The decision-making can occur in mind or community; and, usually, it is covered by a code of conduct. There are dis/advantages in both individual and social decision-making. Disputes tend toward equipollence or preponderance as determined by deliberation. Two views that mitigate decision-making based on deliberation are Popperianism and Pyrrhonism. By deliberation of the grounds or cases of respective positions,

it is determined which position satisfies the standard of establishment (SOE) or proof (SOP). Proof is rational establishment for disputes engaged in alethic inquiry. In both respects, there are weak and strong standards. One position dominates -- though not necessarily eliminates -- the other position/s by defeating them in a contest of (rational) persuasion in discourse. Establishment- and proof-based decision-making can be understood game-theoretically in terms of scores; and even voting within a group. As such, Arrow's theorem becomes relevant to disputes.

Games, Debates and Score Calculus. A perusal of the extensive entry for "score" in the OED [pp.676-680 XIV 1989] suggests that "score" and "score-keeping" originated in early accounting practices and games. A person's account (debt and payments) was kept by means of a tally. What appears most relevant to discourse and dispute is that given for games. Though there is a small reference to "a successful 'hit' in debate or argument", what is said with regard to games is applicable to critical discussion or debate under a games metaphor.

Previously, I undertook a comparative analysis of fights, games and debates. This was used to gain insight into the nature of disputes; in particular, discussion and debate. Apparently, all involve scores and score-keeping in some sense. Of games, the OED [pp.677 XIV 1989] states that a score is:

> A mark made for the purpose of recording a point or the like. ..... [It is a] record or register of points made by both sides during the progress of a game or match; also [it is] the number of points made by a side or individual. .....

In discourse and dispute, the closest activity to a game is a debate in the sense promoted by debating societies. Regardless of this, discussion and debates – such as in parliament or courts of law – seem to involve scores and score-keeping, if only done tacitly within the mind of participating agents.

What then is an appropriate score calculus? A debate, as a dispute over an issue of controversy, is like what is called a score-game. A score-game is "a game in which the player's object is to obtain the highest score possible [as] opposed to match game" [OED p.678 XIV 1989]. A score calculus requires a schedule of points; that is, a regimen for assigning points to relevant and significant moves by agents. In some games, points can be positive and/or negative in value. Agent and groups vary in their use of terms and expressions for points. Generally speaking, the points given are:

(1) Merit points. They are points gained; and they are allocated as points of positive value.
(2) Demerit points. They are points lost; and they are allocated as points of negative value.

One or the other or both may be used depending on the situation. In some competitions each team and player starts with zero points and may gain or lose points. Alternatively, they may start with full points and then lose points according to criteria. Clearly, there is a need to monitor activity, assign scores and "keep tabs" on them over time. Lewis [1983] posits the existence of a score function which is in keeping with the notion of rule-governed agents and language games in conversation. Brandom [p.182 1994], in his precis of Lewis' work, offers this succinct account:

> If at time t the conversational score is s, and if between time t and time t' the course of conversation is c, then at time t' the score is s', where s' is determined in a certain way by s and c.

Furthermore, Lewis [pp.239 1983] posits the existence of a "mental scoreboard". The "conversational score is whatever the mental scoreboard says it is....." The scoreboard is some kind of internal structured memory for "keeping tabs" of scores. Score-keeping is record-keeping but more can be kept on record than scores. For instance, Hamblin [1970; 1979] suggests that agents have a commitment store for "keeping tabs" on what assertions an agent becomes committed to in conversation. Returning to scores, what authority

does a mental record have? Perhaps its useful to distinguish official (objective) and unofficial (subjective) score-keeping where there are differences of opinion on what are the facts and rules of the contest. We might distinguish a public scoreboard and private scorecards. A scoreboard is a public record of scores kept by some adjudicator and for all to see; and a scorecard is a private record of scores kept by an agent who might be a proponent, opponent or member of the audience.

A typical score calculus for debates, athletic performance and even beauty contests is to list n criteria. Each participant is scored (say) out of 10; that is, in the interval [0,10]. An optional rule at this stage is to rank each of the criteria according to its importance (say) in an interval [0,1] thereby giving a weight to each of them. Though based on a sports metaphor (the focus being baseball), this is similar to an account given by Lewis [1983]. Further to the criterial scores is an index score given by:

$$s_x = g(c_1, c_2, \ldots\ldots, c_n) \qquad \text{Eq.4.4}$$

Such an index-based score calculus seems fair and reasonable in the light of experiences of various competitions. The score function g is given by the following equation:

.

$$s_x = \sum_{i=1}^{j} (w_i.c_i) \qquad \text{Eq. 4.5}$$

where:

s = index score
w = weight of importance
c = criteria-based score
i,j = Indices

In some instances, weight=1 when it's not applicable according to the score calculus. This is the kind of score calculus used for debates where "debate"

refers to an intellectual game of skill. In their guide to debaters and adjudicators for the Australian Debating Federation, Missan and Bourke [pp.131-138 1965] outline the scoring method used in debating competitions. A team of three can earn a total of 300 points. Each team member can earn 100 points according to the following criteria:

(1)	Matter (substance of speech)	40pts
(2)	Manner (style of speaker)	40pts
(3)	Method (form of the speech)	20pts

Each criterion is specified in greater detail which I don't need to go into here. However, it's worth noting that an aspect of manner is the persuasiveness or persuasive ability of the debater.

Clearly, people, especially politicians, readily use "debate" for a critical discussion of an issue of public concern. But are such disputes over issues of controversy to be scored in the same way as debates conducted by debating societies? Some might say that they are the same. Disputes are actually games or at least game-like. Following Lewis [1983], Brandom [1994] in *Making It Explicit* develops the notion of language games in conversation; however, though he considers conversational moves like deferral, challenges etc. he doesn't touch upon disputes in discourse as such. Technically, debates may be considered as language games of persuasion involving all manner of skills in a regimented conversation. The implication is that one requires (weighted) multiple criteria to determine the scores and the best disputant. I disagree; and contend that the right outcome -- especially in the case of inquiry -- is only achievable by the privileging of persuasion as the only basis for scoring agents in an uncorrupted dispute. Where points are concerned, supporting appeals (including arguments) for a position are assigned positive persuasive strengths and opposing appeals are assigned negative persuasive strengths. There are terminating conditions that may have a win, lose or draw outcome associated with them. For instance, in courts of law there is the standard of proof. The party, either the prosecution or defence, that is the *only* one to meet the

standard within the time constraints allowed is the winner (or victor) and is deemed to have proven their case.

Deliberation, Equipollence and Preponderance. Discussion and debate proper are best appreciated according to jurisprudential metaphor rather than one based on debating competitions. The analogue for a score in discussion and debate is the strength of persuasion. The manner by which the weighing of arguments and evidence is carried out is shown by the insignia for the law. The judiciary is represented by the goddess Minerva. Athena (a Greek deity) is the goddess of wisdom, skill and warfare who is later identified by the Romans with the goddess Minerva (a Roman deity) [pp.91-93, 455 Mercatante 1988]. Blindfolded to ensure her judgement is "without passion of prejudice", she holds the scales of justice in one hand and rests the other around the handle of a sword. The scales represent the weighing of the cases of the respective positions -- the prosecution and defence -- put to the judge and the jury. This is shown in figure 4.7. Clearly, this is another aspect of a force-strength metaphor applied here. The weighing of evidence -- more accurately, the persuasive support strength of the ground or case – of the respective positions is analogous to the weighing of objects placed on opposite ends of the weight scales to determine which is the heavier of the two. By this we get the weight -- the net persuasive strengths -- of the positions. The scales will tip to one side if one is "heavier" than the other. In this way, it is decided if (the ground or case of) one position outweighs another.

The act of comparing strength and deciding on an outcome is traditionally called deliberation. In *Government & Society*, Hobbes [Ch.XIII Sect.16 p.180 1651] states that

> Deliberation is nothing else but a weighing, as it were in scales, the conveniences of the fact we are attempting; where that which is more weighty, doth necessarily according to its inclination prevail us.

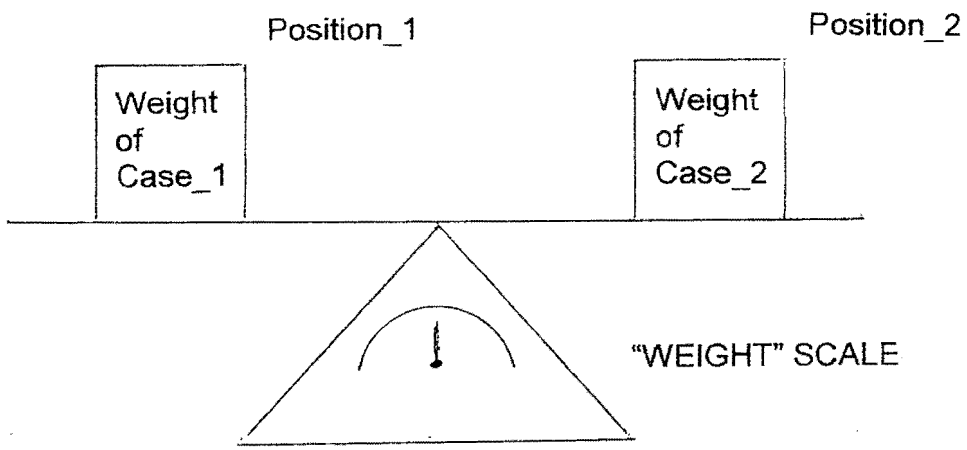

Figure 4.7 Scales for Weighted Positions. Each position strategically develops a ground or case in conversation. The weight of each position's ground/case is an aggregate of the persuasive support strengths of appeals and arguments used in persuasion. Deliberation involves comparison and decision based on the weights of the positions. It is analogous to the weighing of objects on a scale.

This view is reflected in the OED [p.414 IV 1989]. Chantrell [p.141 2002] points out that "deliberate.....comes from Latin *deliberare* 'consider carefully', from *de-* 'down' and *librare* 'weigh'. The base is *libra* 'scales'". A modern account, in the context of action theory, is given by McCann [pp.7-8 1999] who defines "deliberation" as follows:

> Deliberation is the process of searching out and weighing the reason for and against.....alternatives. When successfully concluded, deliberation usually issues in a decision, by which an intention to undertake one of the contemplated actions is formed. The intention is then carried out when [or if] the time for action comes.

Based on these accounts, deliberation involves a comparison of the net strength of positions – typically the weight of their grounds or cases – and a decision as to which position ought to be accepted as the best one amongst the options.

Actually, there are two possible results of deliberation. Assuming the dispute strategically develops toward some kind of resolution stage like that described in section 1.5 of the first chapter, then the two possible outcomes are:

(1) Equipollence. There is an assessed equality of the net persuasive strengths of the grounds of each position.
(2) Preponderance. There is an assessed inequality of the net persuasive strengths of the grounds of each position.

Outcome (1) is like a stalemate in a game of chess or a draw in a game or fight; whereas outcome (2) is like a win in a game or a victory in a battle or war. Each outcome is critically discussed in turn.

First up, consider equipollence. According to the OED [p.356 v.IV 1989] "equipollence" is "equality of force, power or significance"; similarly, the less familiar "equiponderance" is "equality of weight". In disputes (discussion and debate) it is possible that the net support strengths or bodies of evidence of

positions balance out each other. This leads to the attitude of withholding or the suspension of judgement.

Equipollence is the basis for a challenge by the pyrrhonists to decision-making by deliberation. Pyrronhism, which stems from the early reflections of Pyrrho of Elis [c.360-c.270 BC], suggests that disputes ultimately lead to this outcome. Though his focus was on values (ethics) and belief (epistemology), it applies generally. Referring to the works of Diogenes Laertius and Sextus Empiricus, Allen [pp.464-465 1997] elaborates:

> [These works] contain a mass of argumentative strategies, mastery of which was supposed to enable the Pyrrhonist to produce arguments of equal strength on either side of every issue. In most cases, the Pyrrhonist's dogmatic opponent will already have supplied the arguments on one side so that it is left to him to balance those arguments with an opposed case of equal strength. According to the Pyrrhonists, when confronted with considerations of equal force on either side of a question, one is led to suspend judgement. Upon universal suspension of judgement, they further maintain, follows tranquility. Pyrronists, like the Academics before them, were constantly challenged to explain how any life at all, let alone a wise and happy life, was possible without judgement.....

When an agent makes a judgement, it ultimately values one thing over another, be they values, beliefs, rules or anything else. On the contrary, anti-Pyrrhonists recognise that equipollence is a possible outcome; however, given enough of the right argument and evidence, the better position eventually prevails. For example, the Aristotelean notion that truth is stronger than its opposite (say) is aptly described by Milton [p.52 1644] in *Areopagitica*, which is quoted in section 5.3.4 of the next chapter.

Next, consider preponderance. The term "preponderance" seems to have an origin in the superiority in numbers and weight of armies and armoury, respectively. Barnhart [p.833 1988] points out that "the sense of greater power is first recorded in 1780, and that of greater number, in 1845". Furthermore, the OED [p.378 XII 1989] states that preponderance is "the fact of exceeding in weight..... [Thus, a] superiority of power, influence, or importance". Simply, it

involves one thing being outweighed by another. In the essay *Of Miracles*, Hume [Sect.X p.111 1893] puts it in context. He states that

> .....there are all imaginable degrees of assurance, from the highest certainty to the lowest species of.....evidence.
>
> A wise man, therefore, proportions his belief to the evidence. ..... He weights the opposite experiments.: He considers which side is supported by the greater number of experiments: to that side he inclines, with doubt and hesitation; and when at last he fixes his judgement, the evidence exceeds not what we properly call probability. All probability, then, supposes an opposition of experiments and observations, where the one side is formed to overbalance the other, and to produce a degree of evidence, proportioned to the superiority.

Clearly, the superior position becomes immediately obvious where there is a preponderance of the evidence; that is, the weight of the grounds or cases of the respective positions. Furthermore, in his discussion about space, time and indivisibility, where Hume [Bk.1 Pt.II Sect.II p.35 1739/1888] thinks he is "winning the argument", he declares that "to confirm this we may add the following argument, which to me seems perfectly decisive and convincing [of the claim]". It follows that preponderance is what convinces an agent to hold an opinion or claim as a conviction.

Another challenge to decision-making by deliberation is due to Popperians. This view stems from Popper's [1935] philosophy of science. It is called falsificationism and is critically developed in *The Logic of Scientific Discovery*. According to falisificationism, confirmation (e.g. supporting arguments, evidence etc.) is either not enough on its own or is irrelevant or ineffectual in deciding between competing hypotheses or theories. Essentially, their scientific worth is judged according to their robustness in the face of negative empirically-based criticism which could possibly refute them. In evolutionary terms, this view of knowledge development may be compared to the survival of the fittest of organisms in their ecosystems. There is no doubt that robustness of an hypothesis or theory under challenge or attack in scientific discourse is important. What is interesting to note is that falsificationism can be generalised to cover debates over opinions and not just claims. Here, I refer to this stance

as Popperianism. As previously indicated, this view casts doubt over the support side of the balance-sheet of arguments and evidence, to use an accounting analogy. Either support is permissible but is not enough, irrelevant or ineffectual; or, it is not permissible as it contributes nothing to debate and therefore is pointless. Respectively, these two views are weak and strong versions. Such a view is expressed by Miller [2006] in *Out of Error*, a collection of essays on Popper's overarching view of critical rationalism. For instance, Miller [p.65 2006] asks: "What manner does rational argument advance or promote the search for truth?" Of four answers to this question, he endorses only one. Persuasion, discovery and justification are attacked and dismissed. Though he endorses criticism, it is only in a Popperian sense that he does so. He states:

> The primary purpose of argument is to criticize or to probe or to eliminate the propositions that we are interested in, not to provide reasons *either for or against* these propositions.

Though I can't directly engage Miller's views at this time, it is clear that his is a one-sided criticism that is not endorsed here. What can't be denied is the psycho-social impact that *both* supporting and opposing arguments have on the minds of agents and groups generally. All of us have had such experiences in thought and conversation. Referring to the work of Allen, Hale, Montgeau *et al* [pp.275-291 1990], Zarefsky [pp.394-396, 413 1996, ed. 2005] points out that

> ..... messages which provided both arguments for a position and refutation of the opposition are more persuasive than messages that simply present arguments for a position.

Here, a refutation is a challenge to the appeals or arguments of an opposing position. Such challenges give rise to patterns of exchange like attack-defense and objection-reply in discourse. For example, what compelled physicists to take serious note of Einstein's theory of relativity were empirical supporting arguments that refer to the evidence of its predictive success regarding the perihelion of mercury. That was not ignored, with scientists merely waiting for a compelling argument or case to refute it outright. Allowing then for both support

and opposition, when the weight of evidence tips one way or another, it is possible to decide between positions and their associated opinions or claims. What is crucial is that there is at least one active alternative position at work in discourse, if not sooner than later. Once a claim is proved, there is the possibility down the track that strong opposing evidence might appear and require the dispute to be re-opened. At this point, Popperian sentiments can become important; and his situation is discussed further on

The OPR-T, Benchmarks and Standards of Establishment/Proof. Now I wish to show how the opinion-persuasion relation with thresholds (OPR-T) can make deliberation and standards of establishment (or proof) more precise. An appeal or argument has a persuasive strength whereas a ground or case has a net persuasive strength or weight. Each strategic persuasive move, subject to the contingencies of the dispute, is an appeal to the opponent and audience to accept or reject a position. Each relevant and significant move has a persuasive strength which is in support of or in opposition to (some aspect of) a position. This includes appeals, supporting arguments, opposing arguments, objections, criticisms, rebuttals etc. The totality of all ± persuasive strengths of a ground or case made in respect of a position is the weight. This is usually expressed as "the weight of evidence" in law -- or, more accurately, the weight of arguments of the case. A meter model for net persuasive strength in law is proposed by Lopes [1993]. The decision-making of members of a jury involve them, metaphorically speaking, holding one or more meters in their mind. There are meters to register for credibility of witnesses, expert opinion etc. However, it's not clear how all the readings are combined into one estimate of the net strength of a case or the weight of evidence. Horowitz, Willging and Bordens [p.270 1984] suggest that "perhaps each meter is weighted for its value and then combined into one final meter.....".

One way to appreciate the importance of the weight for a position is to track opinion or claim change over time. This is particularly highlighted by the situation where the net persuasive strength is zero. With respect to the OPR-T this could mean one of two things:

(1) The opinion or claim is in doubt as there is no appeals or arguments made in support of or in opposition to it; or

(2) The opinion or claim has a case whose support component and opposition component cancel each other out according to their respective persuasive strengths.

Clearly, it is useful to have a graph which can distinguish these two situations for an opinion or claim. What can do this is the addition of a time-axis as shown in figure 4.8. The graph for P_1 and P_2 at any interval may parallel, converge or diverge with respect to each other. When (say) P_2 dips below zero, then there is growing attitudinal uncertainty that the opinion of position P_2 is false. The claim of P_2 is not necessarily the logical opposite of the claim for P_1. All other things being stable, this confines belief change to a sigmoid sheet. In such a belief-persuasion-time function, it is possible to distinguish the previous two situations. Any opinion arising from the creativity of the agent or communicated by other agents by whatever medium is initially assigned a persuasive strength of zero when time is zero for this opinion in the purview of the agent. At any time in the life-history of the opinion, its net persuasive strength may fall to zero. Clearly then, inspection shows that the two situations can be graphically distinguished.

With respect to the positions P_1 and P_2 and their net persuasive support strengths s_1 and s_2; there are six possible types of order relations between the positions. Let i and j be positional indices such that (a) if i=1 then j=2 or (b) if i=2 then j=1; and t is the standard confidence. Then the possible relations are:

(1) $s_i > s_j$ where $s_i, s_j < t$

(2) $s_i > s_j$ where $s_i, s_j > t$

(3) $s_i = s_j$ where $s_i, s_j < t$

(4) $s_i = s_j$ where $s_i, s_j > t$

(5) $s_i = s_j$ where $s_i, s_j = t$

(6) $s_i > s_j$ where $s_i, s_j < t$ and $s_i, s_j \geq t$

.

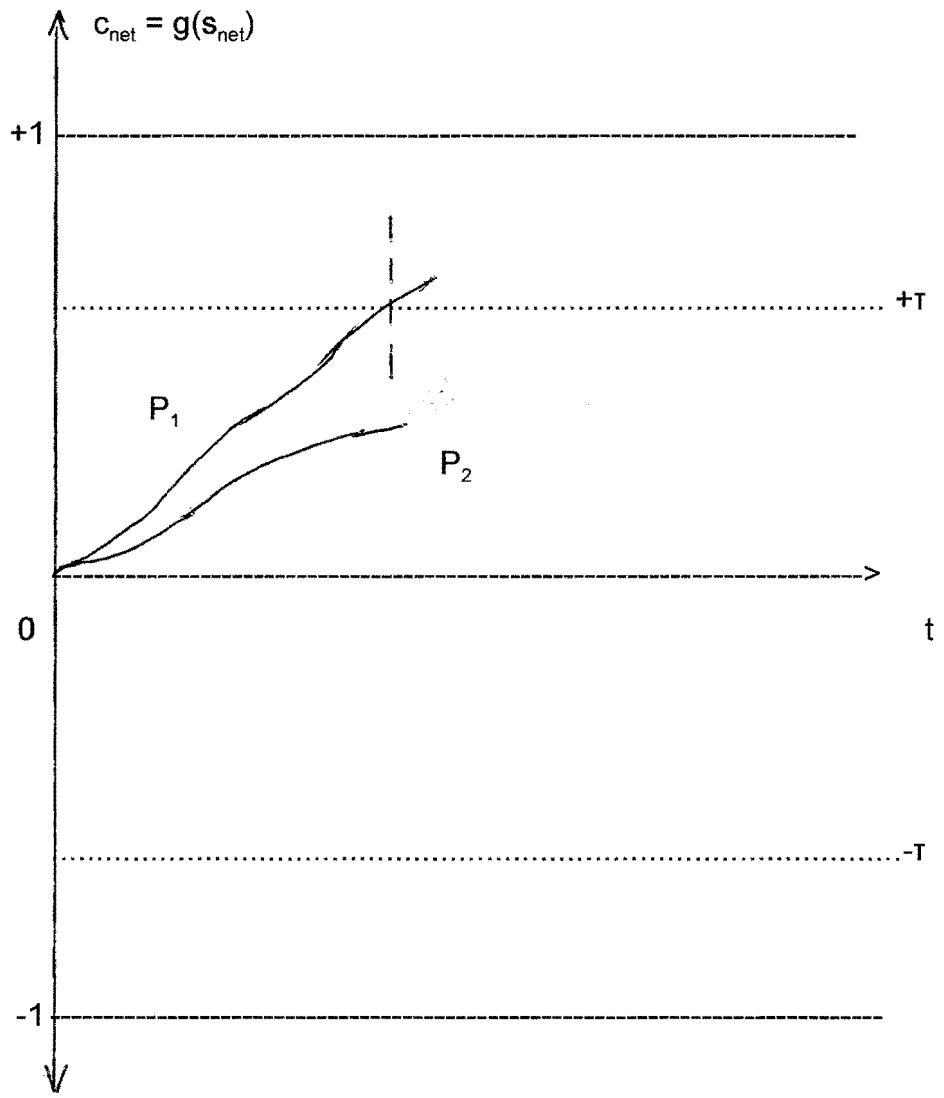

Figure 4.8 Performance Track-record for Positions in a Dispute. The value of the net attitudinal uncertainty e.g. alethic uncertainty (or probability) for the opinion or claim of positions P_1 and P_2 is recorded over time on a common OPR-T or CPR-T as each position strategically develops its ground or case in discourse and in relation to benchmarks +T and -T. The net attitudinal uncertainty c_{net} is dependent on the weight s_{net} (net persuasive support strength) of the ground or case which supports it.

For outcomes (1) and (2), one position is stronger than the other below or above the standard; for outcomes (3)-(5) the positions are equally strong below, on and above the standard; and for outcome (6) one position is stronger than the other such that the weaker position is below and the stronger is on or above the standard. Some of these outcomes are good for decision-making while others are not. I shall compare them using two versions of the principle of sufficient reason as a guide to ranking positions.

For the weak version of the principle of sufficient reason outcomes (1), (2) and (6) are good. On this basis, a corresponding weak principle of positional strength can be stated thus:

> A position P_1 is superior to a position P_2 in the discourse of a dispute if it is determined that its net attitudinal uncertainty is greater than the net uncertainty of P_2; otherwise, it is inferior to the alternative ones.

Underwriting this is a common OPR-T or CPR-T. Now I turn to the other version. For the strong version of the principle of sufficient reason, only outcome (6) will do. On this basis, a corresponding strong principle of positional strength can be stated thus:

> A position P_1 is the superior position if it is the one with a net attitudinal uncertainty that is greater than any of the other positions; and that equals or exceeds the benchmark as specified by a standard of establishment or proof.

The remaining outcomes (3)-(5) are bad for either version of the principle. Clearly, it is rationally important that the code of conduct for disputes promote a discrimination of positions such that a rational agent can decide between positions. But if we want the supreme -- that is, the best rather than just better -- it is necessary that a discrimination occurs in relation to the standard as in outcome (6). Still, difficulties can arise. More likely than not, the agents involved in the dispute estimate differently according to their cognitive style; hence, there

is likely to be disagreement when deciding which is the superior and supreme positions. How can such disagreement be minimised or eliminated? Clearly, as with measurement systems in physics and engineering, it is necessary to have objective rational systems and procedures for measuring and deciding between positions. Where law is concerned, the best that we have are the rules of evidence at this time. This legal system of rules attempts to rationally regiment subjective judgements of agents rather than establish standard units of confidence and support strength along with protocols for the use of measuring instruments and taking measurements with them.

Such measures offer the prospect of producing scores for agents and positions. Score-keeping is a basis for gauging performance in combat, sport and games. Using a combat metaphor, the superior position is the victorious one (victor) and the others are the vanquished ones (defeated). Alternatively, using a game metaphor, one position can be described as winning (the winner) and the other as losing (the loser) the dispute. How are such determinations made? Simply, they are made on the basis of scores! Where disputes are concerned, positions may be assigned scores on the basis of persuasive and argumentative moves which can then be tabulated throughout the dispute as in a game. A net persuasive support strength can be determined for the case of a position. From this the corresponding net uncertainty which can be attributed to the claim of that position.

On this basis, it is possible to formally specify standards for establishment and proof. Real-life disputes come down to winning the dispute through persuasion. This is fundamental to dialecticism. Now “winning” is open to different accounts. One constraint for any calculus has to do with the persuasiveness of the position. On this basis, a rule may be stated as follows:

> Persuasion-win principle (weak). The agent who presents the most persuasive position according to the rules of dispute (including score-keeping rules) is the winner of the dispute; otherwise, they are the loser or the contest is a draw.

This seems fair, reasonable and plausible. However, what about the standard of establishment/proof? To include this, a stronger rule is required:

> Persuasion-win principle (strong). The agent who presents the most persuasive position with a ground/case that is the only one to equal or exceed the benchmark of establishment/proof, according to the rules of dispute (including the score-keeping rules), is the winner of the dispute; otherwise, they are the loser or the contest is a draw.

This is the kind of principle applied in law and which is subject to economic constraints. Even so, in my view, variants of this principle occur across many if not all disciplines including mathematics, science, medicine, engineering etc. Indeed, it's fundamental to the business of life. The need for limits as a basis for decision-making is made clear by Bentham [p.16 1838]. Where legal matters are concerned, he states:

> But, on whatever grounds formed, a scale, with at least a fixed top belonging to it, if not with a fixed bottom, is absolutely necessary to every legal purpose. In every case, on one or other side, a degree high enough to warrant decision on that side is the one thing needful.

This requirement, with reference to OPR-T, may only be met through trial-and-error. It is necessary to take into account the shape of the graph for the OPR-T, the appeals regimen used by the agent and the schedule of support strengths for the various appeal and argument forms

PDM, Group Decisions and Voting. Establishment-based decision-making (EDM) or proof-based decision-making (PDM) can be carried out individually or collectively. Where groups are concerned, there is a reliance on voting, that is, it is possible to have social or group PDM that makes use of voting amongst group members. In this way, a consensus on the dominant position in a dispute can be arrived at. This may be called dominance by consensus.

I recall that during federal election time in the 1990's a debate between the leaders of the incumbent government and the opposition was televised to the nation by a TV station. Each of the members of the audience was fitted with a meter such that they could manually register their real-time judgements in of the persuasiveness of the message they received from the party leaders. The values were somehow combined and displayed on a graph of the aggregated value judgement of the group at anytime. The graph was likened to the trail of a worm and so they used a worm-like icon to mark the frontline of the graph. We can envisage something like this for agents involved in a dispute. Each agent has in their hand or mind a persuasion-o-meter to make its personal judgement. The needle on the dial can move right for negative persuasion or left for positive persuasion and zero in the middle.

There are some constraints, consistent with experiences, that we have to be aware of:

(1) Value judgements of persuasiveness are being made successively “in the moment”; and,
(2) Agents of judgement can only hold so much information in the compass of their awareness or attention.

These are immediately relevant to formative judgements. Given this, the graph for each agent is more-or-less a measure of the net persuasive strength for each position but a series of value judgements relating to persuasiveness of agents, rhetorical moves or routines. To form a summative judgement, an agent would require a score calculus which

(1) Keeps a tally of (public) commitment [Hamblin 1970] and retraction in relation to a position.
(2) Keep track of strength addition and subtraction relating to rhetorical figures (eg. support, argument, criticism, rebuttal etc.) according to some appeal schedule and in relation to a position.

All these calculations are done according to the score calculus and the agent's own graph of the OPR-T or CPR-T.

The personal judgements at any time are then somehow combined to form a social judgement of presumably a socialised net persuasive strengths for each position in the dispute; or utilised by some other means defined by a socialised score calculus. Ideally, within the community of inquirers [Peirce CP. 1911-1958] the right rules regulating the score calculus are those which are more likely to elect the best alternative. For example, in the case of alethic inquiry the score calculus ought to "set the truth free" for all of us to see.

Now we are in a position to propose how the personal judgements of the participants can be combined into a social judgement as the mechanism for social EDM or PDM. That is, how are the grounds or cases to be evaluated so as to calculate the most persuasive position? Here are some possible rules:

(1) Net Change Rule. On the basis of the net persuasive strength assigned to a position by each agent before and after the dispute, the sum of differences (persuaded, no change and dissuaded) determines the score.
(2) Av. Net Value Rule. The case for each position is given a score on an interval [0,n] where (say) n=1 or n=10 by each member on a panel of judges. The average of these scores is the net score.
(3) Majority Rule. The audience votes by a show of hands, secret ballot or some other way on who presented the most persuasive case for their position on an issue. The count is the score.

So, which is the best? There may be more ways of defining a score calculus. But let's consider each of the above in turn. What is important is the extent of persuasion as the basis for deciding which position wins under a regimen for the dispute. Central to all of them is a net persuasive strength that relies on a summative judgement of the agents involved or a sophisticated calculus that analyses the time series results of each. What is also important to the primacy

of persuasion and convincing is the establishment/proof requirement. First, there is the net change rule. It is interesting to know how much agents have been rhetorically moved by the grounds or case presented. It doesn't immediately tell you if the establishment/proof condition has been met; and it requires that initial values be known. Second, there is the net strength rule. As with the previous rule it relies on intuitive, subjective estimates *in lieu* of protocols and discipline. This may be improved by the use of guidelines *in lieu* of instruments attached to agents. Also, it offers some precision in that it gives us an idea of how strong the ground/case is even if it doesn't meet the establishment/proof condition. Third and last, there is the majority rule. It is similar to but a less precise approach than the previous one. The focus is solely on whether or not the ground/case is strong enough to meet the establishment/proof condition. This rule is of the kind found in Law where it's the Jury who vote on the guilt or innocence of the defendant. Basically, they are voting on whether or not the case for a position equals or exceeds the standard of proof. Overall, I think options (2) and (3) are simpler. Also (2) is more informative in that it can give us confidence to act when there is high certainty (but no establishment or proof) and not when its clearly lacking. This option seems to be the best for all occasions (and not just courts of Law).

Social E/PDM and Arrow's Theorem. Social decision-making typically relies on voting and is therefore subject to Arrow's theorem. Obviously, this has a bearing on social establishment-based decision-making (EDM) and proof-based decision-making (PDM). Original work on voting is due to de Caritat [1785] in *Methods of Analysing Probability in its Relation to Majority Decisions*. He was officially known in his time as the Marquis de Condorcet. He proposed what is now called Condorcet's jury theorem. Bix [p.38 2004] succinctly states his theorem as follows:

> If individual voters have a greater than 50% chance of being correct, the greater the number of voters, the greater the chance that the collective (majority) decision will be correct.

Bix points out that his theorem has become important to social choice theory, especially with regard to an understanding of juries and democracies. However, it is worth noting, in my view, that the theorem can apply generally where consensus is part of the decision-making process in a group, organisation, discipline or community. Furthermore, Condorcet identified what has become known as Condorcet's voting paradox. Bix [p.39 2004] explains:

> [The paradox] show[s] how majoritarian voting can lead to indeterminate or "cycling" group preferences. Voter 1 may prefer A to B and B to C; Voter 2, B to C and C to A; Voter 3, C to A and A to B. Given such preferences, a majority vote would prefer A to B, and B to C, but C to A.

Condorcet's work on voting remained apparently ignored or forgotten until recent times when Black [1958], in *The Theory of Committees & Election*, applied it to public choice (which is a kind of social choice). In retrospect, a more general elaborated version of Condorcet's voting paradox had been developed by Arrow [1951] in *Social Choice & Individual Values*.

This now foundational tenet of social choice theory is known as Arrow's theorem but also as "Arrow's paradox" or "the impossibility theorem". Pink [p.59 1995/2005] describes what motivated Arrow's inquiry:

> Why not devise a function which orders options for a [group or community] in terms of the preferences of its individual members. Such a function would have to meet certain conditions on reasonableness. ..... [Based on the given conditions as listed below], Arrow proved that there was no consistent function which met all the conditions.

According to Bix [p.9 2004], the theorem informally states:

> There are often no rational means of aggregating individual preferences into an expression of social [preference].

Formally, the theorem states:

> Given [a] choice among three or more options, five apparently reasonable and [plausible] conditions cannot all be met simultaneously in many situations. They are:
>
> (1) Transitivity. If [a group] prefers outcome A to outcome B, and outcome B to outcome C, then the group prefers A over C;
> (2) Pareto optimality. If at least one agent prefers A over B, and everyone else either agrees or is indifferent, then the group prefers A over B;
> (3) Non-dictatorship. [A] group's preferences are not simply to be equated with that of any one agent [in the group];
> (4) Independence of irrelevant alternatives. If option C is not being considered then whether A is preferred to B should not depend on how either compares to C; and
> (5) Unrestricted domain. There are no restrictions on how the available options can be ranked by individual voters. .....
>
> Disparate results can occur, depending on the order in which choices are put to the voters.

Arrow gave a proof of his theorem which can't be entered into at this time. As Bix points out, this theorem raises doubts about the aggregation of individual utilities or preference orders.

This theorem has implications for social EDM and PDM. In social PDM (say) each group member must determine for itself – based on its own graph of the OPR-T and its net persuasive support strength or weight estimates – which position has met the SOP in critical discussion or debate. This is the basis on which each member of a group, discipline or community decides if any position has met the SOP. Based on a vote, the one-and-only position to do so is the dominant position. Where there is only two positions, then a social PDM can be made; however, where there are greater than two positions, Arrow's theorem exposes some fundamental limits on social decision-making. What can be done to maximise the chances of successful decision-making? One way is to limit decision-making to two options only; however, this may not be always possible. Another approach is to regiment agents according to a strict code of conduct relating to reflection and deliberation so as to minimise stylistic diversity and thereby maximise the chances of preferential commonality without jeopardising the reliability of the decision-making process. Agents are going to make

decisions anyway. Perhaps by waiting for a better common understanding through an improving evidential basis, the disparities arising from Arrow's theorem may disappear, allowing for a social decision to be made. In any case, decisions are made; and we should inquiry further into the tacit inter-agent processes which cause social decisions to be made in the face of Arrow's insights.

CHAPTER 5: KNOWLEDGE

There are four sorts of men:
He who knows not and knows not he knows not:
  he is a fool--shun him;
He who knows not and knows he knows not:
  he is simple--teach him;
He who knows and knows not he knows:
  he is asleep--wake him;
He who knows and knows he knows:
  he is wise--follow him.

Richard Burton
There are Four Sorts of Men
trans. from Arabic (Darius, King of Persia)
c.1880

The focus of my philosophical inquiry now turns to alethic inquiries in discourse. It involves an application of the previously developed dialectics to discourses involving alethic opinions ; that is, claims, beliefs and knowledge. Consequently, it takes into account work done in epistemology. My aim is to develop a theory of belief and knowledge based on inquiry-based debate in discourse. Such a theory is called epistemics [Gk. *epistì mç*, a concern with knowledge; Barnhart p.337 1988]. Essentially, epistemics is the dialectics of (alethic) inquiry; and therefore is a proper sub-type of dialectics as a whole. Its traditional association with knowledge goes back to Socrates, Plato and Aristotle. Blackburn [p.104 1994] captures this in his account: “dialectic.....[is] the art of conversation and debate. Most fundamentally, the process of reasoning to obtain truth and knowledge on any topic”. Of course, dialectics is not necessarily confined to inquiries into the truth of things. However, where such inquiries are concerned, the later views of Popper [Corvi p.19 1997], for instance, take on a dialectical character much in keeping with this definition. Popper was particularly interested in “the paradigm of rational knowledge” [Corvi p.19 1997] and his later views suggest that knowledge is best considered in the context of discourse, in particular those based on debate, persuasion and argumentation. Furthermore, where Reason and rationality are prominent in discourse, then the rational tradition of forensics [L. *forçnsis* Eng. *-ic* (s) belonging to a court of law, (conducted in); Barnhart p.400 1988] offers an approach to a rational dialectics

of alethic inquiry in discourse. Though I don't give a definitive account of epistemics at this time, I endeavour to judiciously cover what I think is appropriate for my inquiry. There are some outstanding issues of the day which I can't fully address at this time; however, I do indicate my stance.

First, I consider the key concepts implicated in defining claims, beliefs and knowledge. Guided by the standard JTB model, the concepts are: truth, belief and justification (or support). However, it is shown that these concepts have conceptual difficulties associated with them., Other concepts e.g. confidence, attitude etc. are required to make sense of them.

Second, I consider general knowledge models There are three theory-types which attempt to elaborate and improve upon the standard justified true belief (JTB) model. The representative theories are: Chisholm's cognitivism (a variant of Cartesian idealism), Hetherington's gradualism and Whately's thresholdism. Each has difficulties; however, thresholdism appears to be more robust and can perhaps include the others.

Third and last, I consider a dialectical approach to knowledge. I critically examine the source-evidence controversy as it forms the basis of a proposed open contested certified true belief model of knowledge; in short, the open CCTB model. This model upholds a context-based version of thresholdism. Its openness recognizes the fallibility inherent in finite agency; and, the model is underwritten by the HH infrastructure of mind. It enables us to address the source-evidence controversy which in turn impacts on the PKG. The models not only emphasize sources but also influences; and reliability measures associated with systems that carry out such functions. Influence through the net persuasive support strength of a ground (or case) forces a choice between positions in a debate. A rational approach rests on the persuasiveness of the cogency of arguments and the net cogency of a case – the body of evidence – that amounts to a proof. A consequence of the rational centrality of systemic reliability measures for sources and influences is that it makes possible the reconciliation of probability conceptions. With this background, dialectics is

applied to the claims, beliefs and knowledge of alethic inquiries. Fundamentally, it rests on the claim-persuasion relation with thresholds (CPR-T). This can be used to show that the other theory types can be interpreted as extreme cases in this model. Knowledge is defined by a benchmark of proof (BOP) in the CPR-T, which is in accordance with a standard of proof (SOP). The SOP includes requirements for acceptable argument forms, proof etc. A claim which is certified by a proof (that is, a case with sufficient net persuasive support strength specified by the BOP) in relation to at least one counter-claim has a corresponding sufficient net alethic certainty (or probability) that amounts to certitude; and therefore the claim is knowledge. Apart from a reconciliation of philosophy (a.k.a. reason and knowledge) and rhetoric (a.k.a. persuasion), it also offers a possible reconciliation of the different conceptions of probability.

5.1 Truth, Belief and Support

In the dialogue *Theaetetus*, Plato [201d c.427-347 BC; Lesher pp.294-295 1997] defines "knowledge" as "true belief with an account". This "is identified in many contemporary discussions as the prototype of the 'justified true belief' analysis of 'S knows that p'". I call this the bare JTB model because *prima facie* it's open to various interpretations. According to bare JTB, an item of information p is knowledge if

(1) p is a belief; and
(2) p is true; and
(3) p is accounted for

otherwise it remains a mere claim or belief. Bare JTB is a minimalist account of knowledge inspired by Plato's insight. Another account of JTB is given by White [pp.132-33 1996]. According to White "the traditional assumptions" regarding knowledge are:

A person knows that p iff
(1) he believes that p,
(2) p is true, and

(3) he has good grounds for the belief.

Here, the focus is on having "good grounds". At the very least, it invokes a judgmental notion of goodness or worth.

The common definition of knowledge used here is due to Rohmann [pp.117-118 2000] because his definition tacitly suggests why a proposition may be labelled a belief. Here, I paraphrase his account:

> Knowledge $=_{df}$ An agent knows claim p if it believes p to be true and that belief is justified.

Here, I take a claim to be at least a proposition (or theory) with an associated doxastic propositional attitude. I emphasise “believes” and “belief” because it highlights that a proposition (content) p is a belief (content) by virtue of believing (process) p. It remains then to make sense of this production of p where p is beyond being mere information. Before examining the three types of knowledge theories, I briefly and critically discuss the underlying concepts and their cognates, which are used to define knowledge. However, this discussion can’t aspire to be definitive at this time.

5.1.1 Truth

In *Truth, Essays or Counsels Civil & Moral*, Bacon [1597] aptly recalls an historical incident where truth was central to the issue at hand. The historical incident is reported in the Gospel of John of the New Testament [Bible 18:28-40]. We are told that Jesus is brought before Pilate, the Roman governor of the region. Pilate seems bemused, if not puzzled, as to why this man has been brought before him. A short exchange ensues:

> Jesus says: “You are right in saying I am a king. For this reason I was born, and for this I came into the world, to testify to the truth. Everyone on the side of truth listens to me.”

> To this Pilate casually replies: “What is truth? .....”

Here, it appears that two notions of truth are being tacitly expressed.

Either Pilate is wondering what theory of truth applies; or each party is tacitly expressing distinct notions of truth. Given that distinct notions are being expressed, Jesus clearly appreciates that there is a truth to the matter. However, Pilate doubts that there is a standard independent of us by which beliefs can he judge true or false. Respectively, it appears that one takes an objective view while the other a subjective view of the nature of truth.

What then is truth? According to the standard analysis, there seems to be a factual requirement for knowledge. That is:

> If X knows that p then a necessary but insufficient requirement is that it is the case that p.

Here, “it is the case that p” appears to be equivalent to notions like “how reality is”, “how things really are” etc. But what does it mean for p to be this way? Frolov [p.431 1984] elaborates as follows. He states that what is true is

> the..... correct reflection of reality in thought, which is ultimately verified by the criterion of practice. The characteristic of truth is applied to thoughts and not to things themselves or the means of their linguistic expression. .....

This requires some interpretation. By using “reflection” it seems to suggest an optical metaphor where thoughts are true by virtue of mirroring reality in some sense; or “reflection” means right thoughts in relation to reality. Both the metaphorical and literal interpretation sit well with me. Indeed, I would add that it is the thoughts (images or propositions) which have truth. But expressions like statements, diagrams etc. can have truth by virtue of their association with such thoughts. Finally, what suggests that an agent has a “correct reflection” is the success of actions in the world informed by those thoughts. This suggests a

pragmatic notion of truth based on “being right with the world”. It is concerned with how well a belief epistemically stands in relation to the things of some domain or world. In giving an account of this, I’m sympathetic to Peirce’s [CP. Para. 2.135, 5.211, 5.402 1911-1958] pragmatic appreciation of the truth. He gives an account of objective truth in terms of:

(1) Pragmatism
(2) Correspondence

A true belief is one that informs an agent’s action such that it contributes to the likelihood of success; hence, it is a utility value and is therefore useful. Why is this so? Because beliefs which are true and are made use of in our actions better correspond to the domain or the world in which actions are carried out. Intuitively, correspondence has to do with mind-world fit; that is, conforming to, mirroring or being epistemically right with the world of things.

5.1.2 Attitude, Uncertainty and Belief

Beliefs are often described using terms like “confidence”, “certainty” and “probability”. Language use suggests that agents have confidence, that probability is a feature of beliefs; and that certainty can go either way. Indeed, certainty is often associated with the probability of a sure thing. These notions were critically and thoroughly discussed in section 2.3.

Traditionally, our appreciation of (degrees of) belief derives from the Platonic-Aristotelean 3-tiers of understanding. The early Greek philosophers – notably Socrates, Plato and Aristotle – identified different kinds of cognition (that is, modes of understanding) and then attempted to order them according to their rational worth. Peters [pp.40-42 1967] and Lacey [pp.741-744 1995] rightly refer to them as grades of cognition. For instance, Lacey states:

> When justification is at issue rationalism is usually concerned (as with Plato and to a lesser extent Aristotle) with distinguishing real or proper

> knowledge from lesser grades of cognition like true opinion, which are unstable and cannot be relied on.

The grades of cognition for alethic inquiry are shown in figure 5.1. In his *Republic*, Plato [V c.427-347 BC] characterises the 3-tiers of understanding as follows: “Between knowledge of what really exists and ignorance of what does not exist lies the domain of opinion. It is more obscure than knowledge, but clearer than ignorance”. Knowledge is graded in terms of its wisdom. Opinion is graded in terms of degrees of probability in the sense of degrees of uncertainty or confidence of the agent. Opinion can only be contingent and probable.

The difference between opinion and knowledge seems to have rested on the rational assurance associated with an agent’s reasoning in thought, discussion or debate. Thus, hypothesis would seem to have zero probability. The notion of belief, as used today, is equivalent to opinion or it is an opinion with a higher probability rating in the Platonic-Aristotelean outlook. In stark contrast to all this is ignorance. Locke [1690] accepted the 3-tiers of understanding; and attempted to improve upon them. He introduced grades of knowledge based on the notion of clear-and-distinct ideas. Locke’s views were later taken up by Hume [1737]. Today, rational belief covers the tiers of opinion and knowledge; however, there is some contention with regard to hypothesis as they implicate low or missing requirements.

To be consistent with the Platonic-Aristotelean 3-tiers of understanding, I have suggested that belief is their opinion. Previously, I have used “claim” for an opinion of the alethic kind. To be precise, I think this is what is meant by “opinion” as used in figure 5.1. Also, I suggested in section 1.1.3.1 that there are public and private sides to opinions; and therefore claims. On this basis, I’m inclined to reserve “belief” for the internal private side of claims. Allowing for the semantic imprecision of language use, this seems to be a reasonable and plausible stance to take. At the very least, it raises points of contention.

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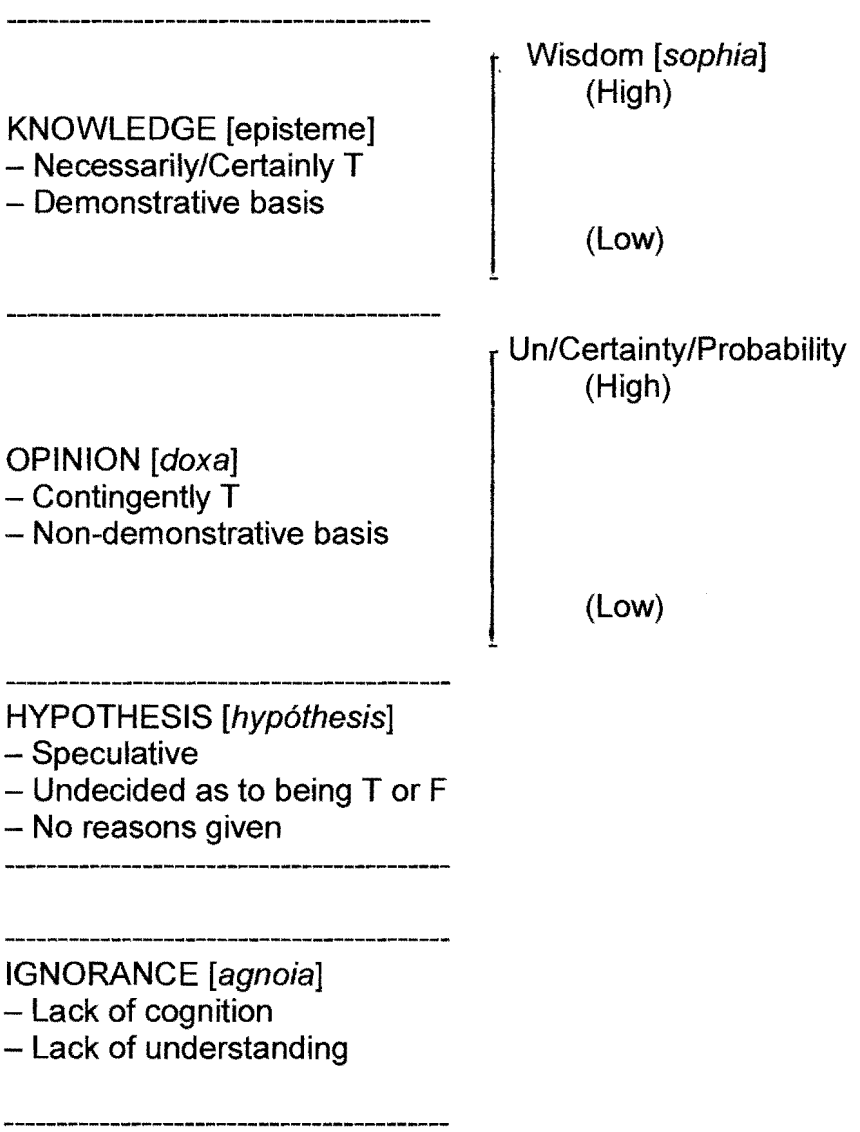

Figure 5.1 Categories and Grades of Cognition. Early philosophers attempted to grade our thinking and understanding according to rational worth i.e. from good to bad. This is the basis for grades of cognition. It is possible to abstract from this the Platonic-Aristotelean 3-tiers of understanding that are relevant to belief (opinion) and knowledge.

However, there is more. Just as opinions are more than propositions or theories – that is, mere information of a particular kind – so it is with claims and ultimately beliefs. What then is the difference between a proposition and a belief? Here, we have to turn to the various theories of belief and knowledge. Suffice it to say that a number of ideas have been implicated in attempts to understand them. They include:

(1) Truth
(2) Attitudes e.g. acceptance, withholding, rejection, denial etc.
(3) Uncertainty
(4) Confidence
(5) Probability

I shall briefly comment on each notion. First, truth has already been critically discussed. The notions of confidence, uncertainty and attitude were critically discussed in some detail in section 2.3.1.

Uncertainty expresses a felt assurance – much like confidence – that has become semantically transferred to the object of that feeling i.e. an opinion or claim. Now we tend to use the associated assurance felt by an agent as its confidence in the truth of p; that is, the agent's alethic confidence in p. Uncertainty and confidence apply to the (kind of) attitude we take toward a proposition; and occur in the interval [0,1]. Taking attitude, attitudinal uncertainty and proposition together we get a claim or belief.

Attitudes reflect a propensity, tendency or inclination to prefer one possible proposition (say) over others. Alethic attitude is central to the nature of claims, belief and knowledge. Indeed, Weirich [p.512 2004] points out:

> Some[times] a propositional attitude [is introduced] to supplement or replace belief [for example]. They generally call it acceptance, but a few call it assent or belief in a technical sense.

Along with acceptance, to the attitude list can be added rejection and withholding/suspension. As noted in section 2.3.1, they respectively take the numerical sign of plus (+), minus (-) and zero (0). Locke [1690] even refers to degrees of acceptance, which is not upheld here. Weirich critically discusses and raises doubts about the necessity of including the notion of acceptance. I, for one, think general attitudinal notions in relation to possibilities arising in thought or conversation are necessary; and that claims and dis/beliefs express an attitudinal sub-class of the alethic kind. An alethic attitude is the acceptance/rejection of p as to its truth. How un/certain an agent is about that is another matter to take into account. What complicates the doxastic picture even more is that "belief" is used for both a mental state (attitude) and content. Weirich [pp.499, 512 2004] highlights these related uses of "belief". He states:

> People, animals, and perhaps some computers have [mental states called] beliefs. Belief may be invested in a person, idea, report, sign, proposition; or sentence (perhaps without even understanding it). A propositional belief's content is also called a belief. For example, the sentence, "We share the belief that snow is white," calls a common content of our mental states a belief.

The implication is that "belief" is used for a mental state (typically an attitude) and a content. Propositions rather than sentences as (the target of) belief seems more fitting as it offers language independence. For example, "snow is white" (English) and "la neige est blanche" (French) express the same belief, though in different languages.

Finally, the uncertainty or doubt attributed to p is often understood in terms of probability. However, the use of "probability" is itself problematic. Indeed, there are crucial contentious issues surrounding belief, probability and their relationship. The traditional approach is sometimes called probabilism; it attempts to couch beliefs in terms of probability, one way or another. Those, including myself, who uphold such a view don't consider them an all-or-nothing affair. On probabilism, Foley [p.430 2000] states:

> .....Belief comes in degrees. Moreover, one's degrees of belief, construed as subjective probabilities, are justified only if they do not violate any of the axioms of the probability calculus [used in statistics].

The probabilistic conception goes back to Aristotle. Later advocates include Locke, Mill, Keynes, Russell, Ramsey and others. Apart from "degrees of belief", Ramsey [Ch.4 1931] refers to "partial belief" in a postscript to *Truth & Probability* which appears in his collected essays. The conformity to the axioms of a probability calculus may depend on the kind of probability one has in mind. And, as to the idea that justification is tied to probability estimates let alone the probability calculus, the situation may not be so simple as mere conformity to a calculus as I show later on.

The word "probability" is ambiguous. Both Keynes and Ramsey recognise two different notions of probability. Here, I attempt to describe them. They are:

(1) Alethic probability (AP). The probability of truths is the degree of uncertainty an agent has that a claim is true (or false). Eg. the probability that a proposition p is true.

(2) Tychic probability (TP). The probability of chances is the degree of uncertainty (or, in this case, likelihood) that an agent has that some condition prevails. E.g. the probability (or chance) of an event e occurring at a particular time.

Clearly, one has to do with propositions and the other with circumstances. I shall briefly clarify each probability conception. First, consider the probability of truths. On this notion, Ramsey [p.159 1926] has this to say:

> ..... It still remains the case that we have the authority both of ordinary language and of many great thinkers for discussing under the heading of probability what appears to be quite a different subject, the logic of partial belief.

Probability is what we assign to a belief to indicate some kind of assurance, uncertainty or their cognates. Second, consider the probability of chances. The

notion of chance is controversial. Here, “chance” has something to do with expectation and/or the existence of randomness in nature. For instance, Peirce promoted the view known as tychism. This is the view that chance is an objective real phenomenon of Nature. In early Philosophy, *tyche* was recognised by both Plato and Aristotle. *Prima facie* each appreciation of probability seems to be a legitimate notion.

Though not often recognised, what complicates things even more is that both are open to subjective and objective accounts. I highlight the four possibilities in table 5.1. For instance, where the probability of chances is concerned Mill [p.351 1898] put it this way:

> We must remember that the probability of an event is not a quality of the event itself, but a mere name for the degree of ground which we, or some one else, have for expecting it. The probability of an event to one person is a different thing from the probability of the same event to another, or to the same person after he has acquired additional evidence. ..... [Thus,] .....its probability to us means the degree of expectation of its occurrence, which we are warranted in entertaining by our present evidence.

It is important to point out that Mill expresses the sentiments of determinism; and that our relative uncertainty concerning events is due to our ignorance of all the facts. Clearly, the “degree of expectancy” is tied to our “degree of ground”. Whatever that might be for a given agent, this gives it a subjective character. If statistics is used, then this would make it objective. Now to the probability of truths. My use of the subjective-objective distinction is different to some standard texts which treat degrees of alethic probability as inherently subjective in nature. However, forensics recognises the possibility of beliefs grounded in fallible objective rationality. Depending on one’s interpretation, this can suggest that degrees of belief or partial belief can be objective.

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	Subjective Prob.	**Objective Prob.**
Probability of Truth (Alethic Prob.)	Subjective Alethic Probability Eg. Bayes	Objective Alethic Probability Eg. Ramsey, Chisholm
Probability of chance (Tychic Prob.)	Probability of Subjective Statistical Judgements	Probability of Objective Statistics

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Table 5.1 Types of Probability Notions. Confusions regarding probability are due to a failure to makes these distinctions. Subtle relationships between belief and expectation may account for these confusions.

Like Ramsey [p.157 1926] in the unpublished paper *Truth & Probability*, I recognise both notions of probability as legitimate. Ramsey's concern is with developing an appreciation of probability which is suitable for "the logic of partial belief and inconclusive argument". However, at the start he offers this caution:

> Probability is of fundamental importance not only in Logic but also in statistical and physical science, and we cannot be sure beforehand that the most useful interpretation of it in logic will be appropriate in physics also. Indeed the general difference of opinion between statisticians who for the most part adopt the frequency theory of probability and logicians who mostly reject it renders it likely that the two schools are really discussing different things, and that the word 'probability' is used by logicians in one sense and by statisticians in another.

As I previously said, I concur with this outlook. One can appreciate that the degree of uncertainty associated with claims is analogous to the uncertainty of events in life. It's not surprising that "probability" is used for both; however, this can confuse us into thinking they are indeed the same idea. Still, Ramsey has suggested that they are related to each other in some way. I will argue later that a compatibilist approach to the source-evidence controversy suggests that the two probability conceptions are related to each other via the notion of systemic reliability.

5.1.3 The Basis-of-Belief

Claims and beliefs aren't established out of nothing. Normally, there is some basis for them – even if, fundamentally speaking, only a causal mechanism of mind. Traditionally, as a basis-of-belief, this is the crucial role of justification in the JTB model.

Foley [p.430 2000] points out that justification, amongst others, is a problematic notion. He states:

> The term 'justification' belongs to a cluster of normative terms that also includes 'rational', 'reasonable' and 'warranted'. .....But there is no generally agreed way of understanding them, nor is there even agreement as to whether they are synonymous. .... It is generally

> assumed, however, that belief is the target psychological state of these terms.

Being “the target” of justification is itself open to interpretation and debate. The relation may be one of influence, dependency or their cognates. As I see it, there are at least two important concerns about justification itself. I base this account on the notion of support, which may be partial or full. They are:

(1) Justification is a very strong sense of the notion of support which is the opposite of refutation.
(2) Justification is a notion that is strictly in keeping with other notions like warrant, support, argument, evidence etc.

I shall comment on each. Intuitively, item (1) seems about right. Justification has a very strong sense of support or warrant; and stands in contrast to refutation. For instance, claim p is either justified or refuted. Though it is more general to demonstration (or proof) used in mathematics, it is analogous to it. Indeed, we can say demonstration is a kind of justification. Given this, it might be useful to distinguish weak and strong senses; and therefore propose that there are degrees of justification, support or warrant. All this would work if it wasn’t for item (2). The realisation that there may be other bases of belief has led to doubt and controversy. For example, consider what follows.

Early in the 20th century, the justification requirement was challenged by Ramsey [p.258 1931]. He states: “We say “I know”, however, whenever we are certain, without reflecting on reliability. But if we did reflect then we should remain certain if, and only if, we thought our way reliable”. In the context of his account of knowledge, Ramsey is saying that the probability (or certainty) we issue a belief p depends on a reliable process. They don’t vary independent of each other. Sahlin [p.92 1990] on Ramsey points out that where “certainty” is used for “full belief in p, to avoid some theoretical problems connected with the updating and dynamics of probabilities, [it] should be interpreted as ascribing p a probability sufficiently close to 1". This convincing alternative has given rise to the internalist-externalist debate or what I call the source-evidence controversy.

What then is the appropriate basis-of-belief? Simply, there are two general positions: a basis-of-belief is a reliable process (reliabilism); or reasons and arguments (evidentialism). Both seem to be reasonable and plausible options. I shall not critically examine each position at this time. As it is central to bridging the PKG and therefore settling the PRC, I deal with it in association with my open CCTB model of knowledge presented in section 5.3. Suffice it to say that Hetherington [2001; 2003] takes a stance that accommodates both positions. I shall opt for this approach at this time. Hetherington proposes to generalise the notion of "good support" such that it covers both accounts. Essentially, a basis-of-belief is good support *sui generis*. This conceptual generalisation works for "justification" and "warrant though it might work for "basis" or "account". What "support" offers is some basis or account of believing a belief is true. Hence, I shall take the same stance as Hetherington. Later, I shall pursue a source-evidence compatibilism that accords with Hetherington's hedge.

Still, there are other issues which are relevant and significant to the evidentialist stance. They involve the nature of evidence; and associated notions like "the body of evidence" or "the weight of evidence". I shall briefly discuss them as they arise in some of the theories of knowledge later on.

First up, there is a concern relating to "evidence". It is an ambiguous term, though the different senses are closely related. Indeed, that closeness may account for its ambiguity. I think the controversy may have arisen from a tacit failure to distinguish reason and evidence. Indeed, there is an ambiguity even today in the use of "evidence". Those two senses are:

(1) Evidence $=_{df}$ reason.
(2) Evidence $=_{df}$ facts from a reliable source.

Like Booth [pp.117-118, 140-142 1995] I'm inclined to distinguish reason from evidence. Clearly, as Booth points out with examples, there are contexts where the terms are inter-changeable. For instance:

(a) You have to base your claim on good evidence.
(b) You have to base your claim on good reasons.

Here, the terms can be treat as synonyms. Following Booth, now compare the following:

(c) I want to see the evidence that you base your reasons on.
(d) I want to see the reasons that you base your evidence on.

The first sentence makes sense but the second one doesn't. We don't usually base evidence on reasons but we do base reasons on evidence. As Booth suggests: "reasons state why [we] should accept a claim" whereas "evidence is what [we] accept as facts, at least for the moment". Thus, the rhetorical structure relating them has this form:

> Claim p is accepted (or believed) *because of* reason r which is *based on* evidence e.

Given this, what things count as evidence? Again, there appear to be two related general senses as to what evidence is. They are:

(1) Objects. Things of the world including information items.
(2) Facts. Information which makes reference to the objects of (1) above.

We may even refer to them as material and conceptual (even logical) evidence respectively. It is with facts that we reason and in doing so, make reference to the objects of evidence. Examples of such evidence include: testimony of witnesses, documents, objects, fingerprints, DNA samples etc. Indeed, we may characterise the reasons (or arguments) which make use of them as evidentiary in nature. This may on occasion cohere with the view that conceives arguments as consisting of premises – the evidence – and the conclusion logically drawn

from them. This highlights the need to be upfront about the use of “evidence” in discussion and debate.

Though I can’t go into it in great detail at this time, there are rules of evidence which are properly within the code of conduct of discourse [Bentham p.7 1838]; that is, its code of conduct. Schum [p.476 2000] states:

> Over the centuries our courts have been concerned about characteristics of evidence that seem necessary in order to draw valid and persuasive conclusions from it. Thus, they have been led to consider such matters as the relevance of evidence, the credibility of the sources from which it comes and the probative or inferential force of evidence.

Generally, this applies to other disciplines like science, medicine, etc. and in a more restricted sense to mathematics. Clearly, just as reasons and arguments have support strength, evidence has a strength or force. Indeed, the due effect of evidence is a concern. Arguments and evidence which arise within a debate may have greater or lesser due effect. The use of exclusionary rules can help to assure due effect [Bentham p.12 1838]. In any case, the so-called “rules of evidence” apply to the use of both reasons and evidence as defined above.

Another important set of notions relating to reason and evidence are totalities associated with them. They include: ground, case and weight. Often agents are compelled to hold a claim as a belief due to a collection of reasons. For instance, reasons and arguments tend to arise through persuasive and argumentative discourses of the mind or community. This strategic composite of reasons in support and defence of a claim is called the ground or case for the claim; and its total or net persuasive force or support strength is called its weight. Now consider the associated evidence. The extent to which the premises of the arguments are facts that refer to evidentially-important objects, then they are called the evidence. Similarly, the totality of evidence associated with them is called “the body of evidence”. Typically, some net degree of confidence, certainty or probability is associated with facts? So, how can we talk of “the weight of evidence”? At this point, I suggest there are subtle inter-relations between reasons, evidence and reliable processes. It is these

subtleties that alerted me to a source-evidence compatibilism and the possibility of bridging the PKG. To be consistent, I think this can only be a shorthand for the weight – the net (persuasive) support strength – associated with the ground or case which makes use of the evidence.

5.1.4 Knowledge and the JTB Model

Having critically examined the central concepts traditionally associated with knowledge, I now return to the bare justified true belief (JTB) model. Clearly, the notions of truth, belief, justification and their cognates are open to interpretation. For that reason, it is important that belief, confidence, truth and justification have to be defined in a clear-and-distinct fashion when specifying a model of knowledge. The bare JTB model is a minimal account of knowledge. Accordingly, a claim p is knowledge if it is:

(1) A belief,
(2) it is true and
(3) it is justified;

otherwise it is not knowledge. This is a somewhat open-ended account as it can be (re-)interpreted and elaborated in different ways depending on the meaning of the terms. It too is open to interpretation and elaboration. With respect to both notions and model some possibilities are preferable to others; and tend to constitute a common ground of options.

Due to Gettier's challenge given in his seminal paper [Gettier 1963], doubts have emerged about the JTB model. Interestingly, according to Sahlin [p.36 1990], Russell [Ch.13 1912] put forward similar challenges in his *The Problem of Philosophy*. Today, few philosophers accept the common view. Still, Gettier has his critics who point to his scenarios as contrivances. However, contrivances or otherwise, a fallibilist would not be surprised by these challenges to the current JTB orthodoxy. A Gettier situation involves an agent satisfying the JTB requirements but still not judged to have knowledge. Those

privy to the situation say the belief has been Gettiered. As an example to highlight this, consider the fake person scenario. Person A is interested in finding an empty room in which to work alone. Person A goes to an apparently available room. From the door, person A notes that: “There is a person in the room”. That alleged entity is person B. However, person B is a fake. It is an android, a human-like robot with AI, designed to emulate a human being; that is, it looks and behaves like a person. Also, there is a real person C who is hiding unseen behind the door (for some reason). How then should we assess the above claim? Clearly, A appears to have JTB but from this scenario they do not. Here, it appears that person A has JTB but intuitively they don’t seem to have knowledge as such.

There are at least three possible responses to the Gettier challenges. They are:

(1) Weaken the requirements for a claim p being knowledge by removing some conditions.
(2) Remain with the current requirements for a claim p being knowledge.
(3) Strengthen the requirements for a claim p being knowledge by adding more conditions or tightening existing ones.

I now critically examine each response in turn.

First, the weaken requirement. We may opt to remove the truth requirement. For example, one may do what Dewey did before the Gettier challenge to JTB. Dewey gave up on the notion of truth and settled on a notion of warranted assertability to characterise knowledge. Recently, Goldman and Hetherington argue that knowledge can be at least true belief. However, because of the nature of the counterexample, weakening the requirements seems to be *prima facie* unlikely to work.

Second, the requirement remains unchanged. Intuitively if not clearly, something is amiss with JTB; hence, this approach is tantamount to a denial or putting one's head in the sand.

Third and final, the strengthen requirement. For example, some defeasibility condition might be added to the list. Today, epistemologists are more cautious; and seem to favour this last option. Hetherington [Ch.9 p.107 2003] characterises this turn of events as follows:

> They hesitate to infer, from a view's being true and well supported, that it is knowledge, ... Now [they] assume that if a well supported true view is to be knowledge, the support for it must be either particularly good, or some special kind of support.....

Of course, there is the possible response of changing the requirements to different ones which are neither weaker or stronger; however, the JTB model has stood the test of time, probably because its works well enough under normal circumstances. For this reason, it seems to be a worthwhile basis for further investigation into the nature of knowledge.

Currently, there are three general theory types that deal with the difficulties associated with the bare JTB model. All of them attempt to improve upon the platonic insight. I identify them as follows:

(1) Limit theory (LT);
(2) Threshold theory (TT); and
(3) Graduation theory (GT).

They are for the most part fallibilistic and rational in character. I shall critically discuss each of these theories in the sections that follow. Until then, it is important to point out that the Gettier problem – or the problem of the fourth condition as some people prefer to call it – is not the only concern. Today's problematic agenda tends to include:

(1) Gettier challenges;
(2) Source-evidence debate;
(3) KK thesis;
(4) Problem of the criterion; and
(4) epistemic improvement.

It is fair to say that a theory of knowledge has to address these concerns if it is to count as a reasonable, plausible and viable option. Furthermore, though I offer some important criticisms of representative models of the three general theory types in their respective sections, I don't produce a thorough critique at this time. I present them so that they can be critically compared to my open CCTB model. This model is based on an application of dialectics, as developed in previous chapters, to belief and knowledge. Ultimately, this is done with a view to bridging the PKG and settling the PRC. In due course, what is interesting and noteworthy is that – though there are general similarities – limit and gradational theories can be viewed as extrema of a moderate view based on thresholds.

5.2 Belief and Knowledge

I have used "claim" to cover propositions and theories; it is an opinion type which is concerned with the truth of things. Now I turn to claims that may be held in the minds of agents as beliefs or knowledge. In doing so, I keep three facts in mind. They are:

(1) The ordinary language use of "knowledge' (non-strict sense), and its associated meaning/s.
(2) The general technical appreciation of knowledge (strict sense) as justified true belief (JTB) and its cognates.
(3) The appreciation of knowledge based on some notion of the worth of an opinion (or information generally).

People want information. But what kind of information do they want? I think it is reasonable and plausible to suppose that people normally want information of worth; that is, good information. But what is it for information to be good? To answer this question we need to have good information about what makes information good. Here, as in other areas of human endeavour, there are differences of opinion; and the difficulty of settling these opinions is called the problem of the criterion. Consequently, this situation leads to different approaches to knowledge based on the diversity of cognitive styles amongst agents and even communities. Indeed, in his *The Problems of Philosophy*, Russell [1912] states that ".....the greater part of what would commonly pass as knowledge is more or less probable opinion". From this, I suggest it is useful to distinguish formal and informal (casual) notions of knowledge. Clearly, according to Russell's intellectual value system some claims to knowledge that people make aren't really knowledge at all from a formal point-of-view.

Here, I critically examine the standard JTB model, its concepts and competing models. Those competing models are appreciated under three theory types: ideal limit, graduation and benchmark theories. Because these theories make use of the JTB model and its concepts as a reference-point; it is necessary to explicate the aforesaid model and its associated concepts of truth, belief, justification and their cognates. Having done this, I critically examine each theory type in preparation for developing a theory of knowledge based on the dialectics developed in the previous chapters. Essentially, this involves the application of dialectics to claims (i.e. alethic opinions) and ultimately beliefs and knowledge. Because my model uses scales of values, I have elected to use comparable scale-based representative theories of the three theory types. The scales may be qualitative or quantitative in nature.

5.2.1 Cartesian Ideal and In/Fallibility

Theories of knowledge that defined knowledge "at the limit" have a long history. Both Plato and Aristotle upheld such a view. A limit theory (LT) of knowledge

arises out of the Grecian attempt to develop grades of cognition [Peters 1967]. However, it received its strongest statement by Descartes.

Descartes' Quest. In his posthumous *Rules for the Direction of the Understanding*, Descartes [1628/9; Post. 1701] arrives at the view that the certainty and (demonstrative) reasoning of Mathematics can be a paradigm for knowledge generally. This is the basis for the Cartesian ideal of knowledge. Blackburn [p.101 1996] characterises this ideal as follows:

> Descartes' theory of knowledge starts with the quest for certainty, for an indubitable starting-point or foundation on the basis alone of which progress is possible.

This "quest for certainty" is carried out primarily in Descartes' [1641] *Meditations*. It is well-documented and commented upon. Suffice it to say that through Cartesian doubt, he discovers what he alleges to be infallible knowledge, guaranteed by self-evidence and God's benevolence. This Cartesian ideal involves beliefs accepted on the basis of being certainly true and by virtue of a mind that can't be mistaken. Such beliefs constitute a foundation for knowledge.

Generally, what kinds of belief contribute to a foundation of knowledge? From Descartes' quest we can identify the following:

(1) The given. There are some claims that an agent (or group) can be fully certain about without any support for them.
(2) The proven. There are some claims that an agent (or group) can be fully certain about because there is a support that amounts to a full proof.
(3) The self-evident. There are some claims that an agent (or group) can be fully certain about because they are their own support in some sense.

These possibilities are apparently distinct, though (3) could be considered as an extreme case of (2). Simply, one requires no basis-of-belief i.e. reason while the other requires one.

Chisholm's Epistemic Attainment. A representative theory of recent times is due to Chisholm [pp.124-134 2nd ed. 1977]. He advocates it under the banner of critical cognitivism, which is an alternative to scepticism, intuitionism. and reductionism as they relate to knowledge and value. Fundamentally, Chisholm's view rests on value judgements akin to those in ethics. Foley [pp.64-66 1996] says that to understood Chisholm's approach, it is necessary to realise that

> Th[e].....project in epistemology can be seen as the counterpart of a project in ethics that seeks to describe various sets of non-moral conditions that are sufficient to make an action morally right.

And, like such ethicists who recognise more than one basis of moral obligation; epistemologists are required to recognise more than one basis of justification.

Chisholm's [pp.13-15 2nd ed. 1977] approach to knowledge rests on three central principles. They are:

(1) Defeasibility Principle. If the conjunction p&q is justified for S, then believing p&q is more justified for S than believing p while withholding q.
(2) Foundation Principle. If anything is probable for S, then something is certain for S.
(3) Non-strict KK Principle. If S knows that p then if S believes that he knows that p, then S knows that he knows that p.

Both (1) and (2) express anti-pyrrhonist sentiments. I shall elaborate on Chisholm's views in relation to these principles, including his scale of epistemic attainment that derives from them.

First, consider the defeasibility principle. This view is contrary to pyrrhonism. According to the Greek sceptic Pyrrho of Elis [c.365-275 BC], all positions are counterbalanced – or can be shown to be counterbalanced – by some other position, if not immediately then eventually. Chisholm [p.9 1977] points out that

> .....this would be contradictory. The assumption that we are justified in supposing that every proposition is counterbalanced, presupposes *that* proposition, at least, is *not* contradictory.

According to Chisholm [pp.148-9 1964], an agent's belief that p is *prima facie* justified by the (body of) evidence it possesses; however, it is possible that additional evidence may undermine that justification. If this occurs then the original justification is defeated; otherwise, it remains undefeated at this time. This gradualist approach to belief led him to posit a descriptive "hierarchy of epistemic concepts" [Chisholm p.15 3rd ed. 1989]. The upshot of this sentiment is that positions that are really based on truth are doxastically stronger than those which are not. Generally, such positions will win out over any counter-position in a debate. This anti-pyrrhonist approach is based on the notion of defeasibility which was introduced into considerations of knowledge by Chisholm [pp.147-53 1964]. Broadly speaking, Chisholm's anti-pyrrhonist stance rests on two important concepts. They are: doxastic attitudes and total evidence. I shall discuss them in this order. Consider doxastic attitudes. Chisholm [p.6 3rd ed. 1977] recognises that there are different attitudes an agent can take to a claim. He states:

> There are three possible belief-attitudes that I may take with respect to [a] proposition..... :
>
> (1) I may deny the proposition; or
> (2) I may affirm the proposition; or
> (3) I may withhold the proposition

Now consider total support and evidence. This relates to the notions of weight (net support strength) and ground, case etc. In his *Perceiving*, Chisholm [p.22 1957] takes a general approach to probability which is able to accord with both "ordinary use" and "technical uses". He states: "..... saying one statement or

hypothesis is more *probable than* another may be very much like saying that one is *more worthy of belief* than the other". Furthermore, the different uses epistemically function in similar ways. This applies equally when discussing the probability of a claim in relation to the total evidence. Chisholm [pp.28-29 1957] describes this relation as follows:

> If a statement is probable in relation to the total evidence of any subject S, then S has adequate evidence for the statement. If a statement is improbable in relation to the total evidence of any subject S, then it is one which is unreasonable for S. And if one statement is more probable than another in relation to the total evidence of my subject S, then the one is more worthy of S's belief than is the other.
>
> If it were possible to assign *degrees* to the probability which a given hypothesis has in relation to a man's total evidence, then we should say that the hypothesis is epistemically *indifferent* for him only if it has a probability of .05 in relation to that evidence. And we should say that the hypothesis is evident if it has a probability less than .05. But, although it is possible to assign degrees to the probability which some hypothesis have in relation to certain types of premises, it is in fact unlikely that degrees can be assigned in any acceptable way to the probability which any hypothesis has in relation to the *total evidence* of any particular subject.

This last point echoes a comment made by Russell [p.342 1948] in his *Human Knowledge*. How do we arrive at a probability of a claim in relation to the total evidence available? He addresses this question in relation to a claim as to how long he will live:

> Every circumstance of my death and my way of life is relevant, but some of these may be so uncommon that I can get no reliable help from statistics. ..... The probability at which I finally arrive is this something quite vague and quite incapable of numerical measurement; but it is upon this vague probability that.....I have to act.

Second, consider the foundation principle. But (2) alone recognises a probability notion that not only allows for the possibility of certain propositions. For Chisholm, there are foundations by which knowledge is defined. That foundation is *a priori* beliefs which consist of what is intuitively certainly true beliefs and what is deducible from such beliefs. This includes self-presentation of internal

mental states which don't require evidential support. Other kinds of belief are defined in terms of justification , what is evident and coherence.

Third and last, consider his non-strict KK principle. As Chisholm [p.99 1977] points out, the KK thesis has been affirmed by many philosophers. For instance, Schopenhauer [p.166 Sect.41 1897] states:

> Your knowing that you know differs only in words from your knowing. 'I know that I know' means nothing more than 'I know', ... If your knowing and your knowing that you know are two different things, just try to separate them, and first to know without knowing that you know, then to know that you know without this knowledge being at the same time knowing.

In more recent times, Hintikka [1962] has affirmed "a version of this principle". This principle allows for an agent to know that it knows that p, though this is not necessarily required for the agent to have knowledge.

Chisholm [Ch.2 3rd ed. 1989] goes on to define knowledge in relation to a 13-step epistemic hierarchy as shown in figure 5.2. Hetherington [Fn.5 p.147 2001] characterizes Chisholm's scale as follows:

> His theory depends upon the idea of grades of epistemic attainment - variations on the idea of one belief being more or less justified than another..... [Essentially,] he constructs a hierarchy – a small spectrum of grades of justification.

What Hetherington goes on to point out is that there are no grades of knowledge in Chisholm's theory. Knowledge is only attained by an agent's belief satisfying the topmost condition; that is, a claim is knowledge when the agent is fully certain in the light of the total evidence available. Consequently, it's a scale of epistemic attainment. Each level on the scale stands for an epistemic status of p based on an epistemic appraisal. A general account, that covers all levels, is given by Foley [pp.64-66 1992]. He states:

.

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6. Certain
5. Obvious
4. Evident
3. Beyond Reasonable doubt
2. Epistemically in the clear
1. Probable
0. Counterbalanced
-1. Probably false
-2. In the clear to disbelieve
-3. Reasonable to disbelieve
-4. Evidently false
-5. Obviously false
-6. Certainly false

where:

D6 p is certain for S $=_{df}$ For every q, believing p is more justified for S than withholding q, and believing p is at least as justified for S as is believing q .

D5 p is obvious for S $=_{df}$ For every proposition q, S is more justified in believing p than in withholding q .

D4 p is evident for S $=_{df}$ For every proposition q, believing p is at least as justified for S as is withholding q.

D3 p is beyond reasonable doubt for S $=_{df}$ S is more justified in believing P than in withholding p.

D2 p is in the clear for S $=_{df}$ S is not more justified in withholding that proposition than in believing it.

D1 p is probable for S $=_{df}$ S is more justified in believing p than in believing the negation of p

D0 p is counterbalanced for S $=_{df}$ S is as justified in believing p as in disbelieving p and vica versa.

.

Figure 5.2 The Scale of Epistemic Attainment. This descriptive scale consists of levels of justification and the evident. Because of the stepwise nature of the scale, “level” is preferable to “degree”, though “grade” appears to accommodate both options.

> If certain non-epistemic conditions are satisfied (e.g. conditions about what S is experiencing, believing, etc.), then a propositions p has a certain epistemic status for S (e.g. it is evident or beyond reasonable doubt for S).

This is the general schema for justifying belief and ultimately knowledge. The levels highlight that normative states supervene (depend) on internal non-normative states of the mind. The principles used to organise the levels into a scale are:

(1) The strict evident/nonevident division. The set of all propositions evident to an agent is “the body of evidence” or “total evidence” of that agent.
(2) The “more justified than” relation. This allows for degrees of justification.
(3) The “more preferable than” relation. For (1) the evident is more preferable than the non-evident; and for (2) the more justified is preferable to the less justified.

These basic ideas are used to define different doxastic states of the agent; and to organise those states into “a fifteen-category epistemic hierarchy, ranging from the certainly false to the certainly true” [Benfield p.333 v.2 1998].

Chisholm points out that his approach is similar to ''the degrees of credibility'' of Russell [p.381 1948] critically developed in *Human Knowledge*. Russell states:

> When in relation to all the available evidence, a proposition has a certain mathematical probability, then this measures its degree of credibility.

This is a narrower expression than what Chisholm has in mind -- being defined ''in terms of the probability or confirmation relation and the evident''. What seems central to Chisholm's account of knowledge is the notion of justification or support. Other notions like being probable, being evident, being certain, being '''beyond reasonable doubt'' etc. are defined in relation to it. Furthermore,

there are various sources of justification. For instance, there are the perceptions of the senses, the self-presentations of the mind and so on.

This ''hierarchy of epistemic concepts'' can be used to show changes in our beliefs on their way to possibly becoming knowledge. He suggests that through reflection it is possible for agents to correct and improve their beliefs. Progress in this regard can be tracked and recorded by reference to the epistemic hierarchy. However, beliefs only become knowledge once they have attained the ultimate level of certainty. Therefore, knowledge remains a Cartesian ideal, albeit a fallibilist one, requiring full certainty with an associated full justification or support.

There are some concerns I wish to take up regarding Chisholm's theory of knowledge. The first concern relates to the meanings of terms and expressions. Granted, the terms and expressions used by Chisholm in his levels of epistemic attainment are familiar ones. But is he right to use them in the way that he does? One can envisage levels of certainty as Russell [1926] does with doubt defining a band in the very uncertain segment of the scale. Still, one can also envisage levels of probability as well. What is the connection between them, if any? Then there are notions of vagueness couched in terms of clarity that are used on occasion. What then of "evidence"? This notion has closer affinities with arguments and sources of information. Overall, the scale appears reasonable and plausible in terms of our value judgements; however, the descriptive expressions associated with the different levels don't seem to fit as well as one might expect; that is, they seem semantically forced and contrived on occasion.

The second concern relates to the extremism of a full certainty condition for knowledge. It may be argued that the full certainty condition for knowledge, though achievable on occasion, is ultimately unrealistic. I say it is achievable merely because some agents hold a view of knowledge where they can have experience – putting aside hyperbole – of full certainty and confidence. However, prudence dictates that just as we ought not to jump to conclusions, so

we ought not be too quick to assign full certainty to claims. As the notion of prudence suggests, the more sophisticated the value system guiding our judgements, the harder it is to achieve full certainty. Indeed, having full certainty under some value systems may be rare. Furthermore, given that available resources -- time, effort, money etc. -- are often a concern when travelling the road to full certainty the journey could become quite expensive; and may even be not economically viable. Clearly, where the value system is based on strong principles of rationality, this is most likely to happen; even though this is the kind of value system most likely to yield the truth. Taking all these factors into account, it seems prudent to "lower the bar" and accept that being "certain enough" under fair-and-reasonable regulations that favour the emergence of the truth, is more economically realistic than "hanging out" for support that enables us to reach full certainty and be epistemically entitled to act on this knowledge. In this way those concerned can get on with the business of life. Clearly, the urgencies I suggest are most apparent in court-cases and medical diagnosis of a patient's illness.

5.2.2 The Spectrum of Knowledge

Attempts have been made by Plato, Aristotle, Locke, De Morgan, Keynes, Peirce, Dewey and others to make sense of "degrees of knowledge" and put forward a graduation theory (GT) of knowledge. However, these early proposals are not discussed at this time. Recently, Hetherington [2001; 2003] has re-ignited debate over "degrees of knowledge" in a number of papers that later culminated in his *Good Knowledge, Bad Knowledge*. Essentially, he is interested in "whether there could be grades of knowledge – that is, both better and worse knowledge" of the same fact. A position that affirms (degrees or) grades of knowledge is called epistemic gradualism. Today, it is generally appreciated that there is better and worse knowledge in some sense.

Hetherington's theory rests on a number of reasonable and plausible assumptions. They are:

(1) Fallibilism. Finite agents in the world are fallible in the conduct of life. They get it wrong or fail on occasions.

(2) Objective rationality. Agents do better or are better off in thought and action by being rational and objective rather than anything else.

(3) Epistemic preferences. Agents prefer to think and act on the basis of knowledge rather than on mere opinion or belief.

Taken together, rational agents tend to favour objective fallible critical rationality. This tends to occur in different degrees or grades. Indeed, our experiences appear to highlight this. People make mistakes; and some people are better than others at *not* doing so. In recognising the realities of finite being, fallibilism challenges scepticism about knowledge. Indeed, Hetherington [p.156 2003] suggests that scepticism is an "overreaction to an apparent fallibility", to our being mistaken or getting it wrong on occasions.

Hetherington [2001; 2003] then offers a theory of the nature and development of knowledge that accords with the aforesaid assumptions. His gradualist approach is a challenge to the current *milieu*. Hetherington [Pref. pp.vi-vii 2001] states:

> In two fundamental respects, knowledge is not what it has been assumed to be -- and to accept this is to see epistemological questions in a new light. What are those respects? They correspond to what.....are two dogmas of epistemology -- two false theses about knowledge which almost all epistemologists have presumed to be true.

He then proceeds to give an account of these so-called dogmas. The targets in his sight [Hetherington pp.3,110-111 2001] are:

(1) Epistemic absolutism. ".....Knowledge is absolute in the sense that it is impossible for a person to have better, or to have worse, knowledge".

(2) Justificationism. "Knowledge does entail justification". That is, it is impossible for an instance of knowledge not to include a

> justification component: a belief's being true could not be enough for its not being knowledge" In short, it can't be zero on some scale of justification (or the like).

Given these alleged false dogmas, one is either left to abandon them or modify the current orthodox JTB model. Hetherington has in mind to modify it, "to reshape it a little". In doing so, it enables "a unified systematic yet sympathetic" dismissal of a number of traditional concerns which I listed previously. Also, it contributes to a better understanding of fallibility, circularity, experience, context, dogmatism, relevance, and regress"; and it offers "a new conception of epistemic improvement". Generally, what Hetherington [p.117 Ch.9 2003] suggests is that we have reason to treat knowledge as having three fundamental features:

> Knowledge is objective.....and graded..... and fallible. Objectivity and fallibility are commonly attributed to knowledge; viewing it as gradational is non-standard.

The notion of graduated knowledge (of a fact) is a major shift from past graduated approaches, in particular those of the early Greeks, Locke, De Morgan, Keynes, Peirce, Dewey, Keynes, Russell and Maritain. It is in sympathy with reflections on grading knowledge by De Morgan [1847], Quine [1987] and a derivative conception of Lewis [1996]. This conception was inspired by early papers by Hetherington, which eventually led to Hetherington's [2001] *Good Knowledge, Bad Knowledge*. Hetherington still maintains a distinction between knowledge and non-knowledge, though knowledge itself is a graduated notion. Thus, it is possible for an agent to have better or worse knowledge of a claim. Value judgements of epistemic worth of a claim can be made between agents in the one period of time or an agent at different periods of time.

First, consider the challenge to the dogma of epistemic absolutism. I now look more closely at his specific proposals. Hetherington [Ch.1 2001] argues that if one rejects epistemic absolutism, then one doesn't have to necessarily accept

epistemic relativism. Such a view is epistemic non-absolutism, which allows for different grades of knowledge of a (particular) fact. Still,

> knowledge is to be absolutely distinguished from whatever is not knowledge..... This is because there is an absolute cutoff point between knowing and not knowing. But within the category of knowledge....it is possible that some cases of knowledge that p are better.....than other cases of knowledge that p.

For a rational agent, that cut-off is based on justification, warrant or support. Where there is sufficient justification etc. then there is knowledge. Any more justification makes no difference. However, where there are grades, more “good support” makes a difference -- it can make for better knowledge. Hetherington offers a number of examples, two of which I re-state in his words. One is:

> Knowledge of a brain. I know very well that I have hands; I know less well that I have a brain. A neurosurgeon could know much better than I do that I have a brain. I do not want such good knowledge of my having a brain!

The other is:

> Knowledge of pain. I know that I feel pain. I know that you do, too. But I know better that I do than that you do -- whereas you know better that you do than that I do.

These, amongst other examples, are *prima facie* consistent with everyday language use of "to know", "knowledge" etc. Furthermore, as Hetherington argues, improvements in an agent's understanding through education or research or reflection appear to show that knowledge can be made better than before.

How then are grades of knowledge to be conceived? The grades occur along a scale of worse-and-better knowledge. Hetherington [pp.146-147 2003] envisages a "spectrum of knowledge" for comparing different knowledges of a fact. He puts it this way:

> Mere true belief that p satisfies the loose sense of 'knowledge': minimally justified true belief satisfies the all-but-loose sense of 'knowledge'; and so on, along a spectrum of knowledge, with conclusively or infallibly justified true belief satisfying the strictest sense of 'knowledge'. ..... These senses of 'knowledge' have something in common: each corresponds to a degree of knowledge, a quality of knowing..... [Thus] there is better and there is worse, knowledge that p, there are stricter and there are more popular standards of knowledge that p.

This scale for grades of knowledge starts at zero and increases. It is not quite clear if it increases discretely or continuously; nor is it clear that there is an upper end at n or it goes to infinity. Nonetheless, as knowledge is tied to the good support associated with a fact, then the "spectrum of knowledge" is associated with the degree of good support.

Thus, the so-called “quality of knowing” is best appreciated as “good support” for a claim. Essentially, grades of knowledge is based on degrees of “good support”. On degrees of support Hetherington [p.94 2004] states:

> There are many extents to which a view can be well supported. That is, support for a view can be better or worse. There are grades or degrees of possible support. There can even be better or worse good support for a view. ..... Although the concept of good support is objective, it is not absolute. Objectivity and absoluteness are different properties. A view can rest upon support which is objectively good (because its quality is not ultimately a matter of opinion), even while that support might have been better or.....worse.

Hetherington’s notion of "good support" appears to implicate a joint value judgement of support and worth. Not any support will do -- it is better that it satisfy certain epistemic requirements. Those requirements are:

(1) Generality
(2) Fallibility
(3) Objectivity
(4) Zero inclusivity

I shall comment on each requirement as a way of outlining a specification of support in Hetherington's sense. First, good support involves generality. Hetherington [p.94 2003] states that

> I am using the more everyday phrase 'well supported generally', referring to the many possible ways for a view to be well supported as being true. [However,] a view could also be supported in ways -- such as move or practical ones -- not bearing on whether it is true.

Essentially, he uses a generalised notion of support that covers different accounts of support. It can include the reliable sources of reliabilism [Goldman 1979; 1986] or the reasons and arguments of evidentialism [Feldman and Conee 1985]. Thus, it is independent of the source-evidence controversy. Second, good support involves fallibility. According to Hetherington [Ch.8 pp.94-95 2003] good support can be partial or full on a scale of good support. This reflects the fallibilist nature of good support and therefore knowledge. Agents can get it right or wrong about the support and knowledge they allege that they possess. Furthermore, "whenever support is fallibilist, there is a possibility of improving it" [Hetherington p.95 2003]. Third, good support involves objectivity. As Hetherington [p.93 2003] explains:

> ..... It can be objectively true whether or not a given person has good support for a particular belief or claim (for its being true). That is, good support could be present even if no one suspects that it is; it can be absent even if no one believes that it is. A view's being well, or its being poorly, supported is not simply a matter of opinion.

This appears to suggest a God's eye view of good support and knowledge. Fourth and last, good support involves the inclusion of zero values . As this requirement is crucial to other challenges to the dogmas of epistemology, I treat it separately and next.

Now consider his challenge to the dogma of justificationism. According to Hetherington [Ch.4 pp.110-111 2001], justificationism is the claim that

> knowledge does entail justification. That is, it is impossible for an instance of knowledge not to include a justification component: a belief's being true could not be enough for its being knowledge.

Simply, you can't have knowledge without some justification. With reference to Plantinga [p.3 1993], Hetherington argues that "in principle knowledge need not include warrant -- something which is needed, and which suffices, to convert a true belief into knowledge". In his own words, Hetherington [pp.109,147 2001] states:

> ..... It is at least possible for something to be knowledge without being a justified true belief. I do not dispute that any case of knowledge is a true belief; what I doubt is that in principle all true beliefs need to be justified, if they are to be knowledge. My hypothesis, then is that any mere true belief -- any unjustified true belief -- is knowledge: unjustified knowledge is possible. This means that it is conceptually possible for there to be knowledge that does not include the epistemic subjects true belief being supported by good evidence or being reliably caused, say.

This position is called epistemic minimalism as "mere true belief.....[is] a minimal kind of knowledge". Hetherington [Fn.8 p.150 2001] adds:

> ..... We might find it theoretically satisfying -- simple, non-arbitrary -- to see minimal knowledge as being a limiting case of a poorly justified true belief: zero justification would be on the same categorical spectrum as all other amounts of justification, with any accompanying true belief that p's quality as knowledge that p being determined by however much justification for it is present.

A similar point was made by myself with respect to opinion (degrees of uncertainty) and persuasion (degrees of persuasive support strength). In chapter 2, I critically discussed this in terms of zero-inclusion and -exclusion options. I argued in favour of zero-inclusion on scales of values like uncertainty, probability, support etc. Simply stated, a zero on a scale marks a limit case.

A consequence of this gradualist approach to knowledge is that it allows for improvement in the knowledge of a fact. Hetherington [p.158 2003] puts it this way:

> .....when knowledge of a fact is fallible, in principle that knowledge could be improved. This might occur by improving one's evidence. But improvement's being possible does not prove that it must occur if knowledge is to be present. Knowledge..... could be good without being even better. There are different possible grades of fallibility in one's support for a particular view: always, your evidence in support of a view is more or less supportive -- more or less good. Correlatively, there can be grades in one's knowledge.....: always, your knowledge.....is more or less fallible -- more or less good.

Thus, “the spectrum of knowledge” can be used to track, if not measure, changes to the epistemic status (that is, worth) of a claim over time. As he points out, it can even track changes arising through education.

To be fair and reasonable, Hetherington has expressed other views regarding knowledge which he considers to be consistent with his gradualist approach. Indeed, he emphasises that other familiar notions like confidence, degrees of belief, probability etc. match up or correspond to his scale of generalised support. Elsewhere he has espoused favourable views regarding the following:

(1) Degrees of confidence, probability and belief
(2) Defeasible reasoning
(3) The contesting of positions
(4) Open societies

Obviously, most of these notions accord with the tradition of forensics. I point them out because I don't want to give a false impression of Hetherington's understanding of knowledge, especially when I apply similar ideas in my own account later on. I shall briefly highlight his other views. First, confidence, probability and belief. Agents hold a belief with some confidence. On this Hetherington [pp.92-94 2003] states:

> .....something is amiss whenever a belief is held, or a claim is made, more -- or, indeed, less -- confidently than the objective support for its being true warrants. What is amiss is a subtle disharmony. Whenever you have good support ideally you believe or claim confidently; whenever your support is poorer ideally you believe or claim less confidently. Of

> course, this is more easily advocated than achieved. It is worth advocating, though -- because it is worth achieving.

What he appears to be alluding to is the fallacy of confident assertion. Further to this, Hetherington [Fn.10 pp.154-55 2001]. is open to the notions of degrees of belief and doxastic gradualism. He states:

> Doxastic gradualism is the view that in principle one's doxastic commitment to the truth of a specify proposition could be more or less. And (as an anonymous adviser suggested) if one accepts epistemic gradualism, then it is natural to accept doxastic gradualism too. The latter could contribute to the former, with the strength of one's doxastic commitment to p being a further element (all else being equal) in the quality of one's knowing that p.

What he says with regard to confidence and belief in relation to good support and knowledge seems reasonable and plausible. However, it is merely suggestive and vague regarding the details. Second, defeasible reasoning. This is indicated by Hetherington [Pref. p.xiv 2003] in his comment on dealing with differences of opinion. He states:

> ..... when I do express (and argue for) a [position], I know that I might be mistaken. Consequently, I accept the possibility of your being able to think of a better argument against the view I favour.

Essentially, he proposes that it is possible to be "open-minded and critical" in reasoning about positions on an issue. Strong criticism could weaken one's position and perhaps lead to its defeat. This echoes the defeasibility of Chisholm's position. Third, the contesting of opinions. This is merely suggested by a comment that Hetherington [p.154 2003] makes on competing positions. He states: "They have battled -- and bested – [the]..... arguments" of the alternative position/s. Fourth and last, open and closed societies. On this, he echoes some of the views expressed by Popper [1966] in *The Open Society & Its Enemies*. Hetherington [pp.117-18 2003] states:

> A society that is closed on a given topic does not respect a fully questioning search for well supported true views on that topic, preferring the cultural solidarity of traditional views. That society is not open to the

> possibility of its received wisdom on that topic being found to be false. That received 'wisdom' is therefore never tested..... This failing could be present within any given culture or society. Nevertheless, this is not to say that it is present within all cultures or societies, or that it is present to equal degrees within all cultures or societies.

Of course, Popper [Ch.10 v.1 1960] was referring to the testing of scientific theories as Hetherington does point out. However, this account is readily generalisable to other contexts and situations. Overall, Hetherington expresses views which are in sympathy with a rational dialectics like the tradition of forensics. Still, at the core of his view is a “spectrum of knowledge”.

If one is to propose and argue in support of a theory (of knowledge), one is obliged to address the live issues and positions of the day. Previously, I listed those issues at the end of section 5.1.4. Hetherington [2001] endeavours to do just that but in terms of his epistemic gradualism. First, the challenge to the current dogma. Hetherington's epistemic gradualism is a relevant alternative that challenges theories that determine knowledge according to an ideal of perfection (limit theory) or a benchmark of sufficiency (threshold theory). Hetherington’s attempt shows that his theory can do a better job at making sense of our language use regarding doxastic and epistemic terms. Second, scepticism. Today, the common reaction to the views of the sceptic is fallibilism. Hetherington shows that his epistemic gradualism is consistent with the modern trend of fallibilism. Third, the internalist-externalist debate. Hetherington invokes a general notion of good support that accommodates knowledge theories based on either the reliability of sources (reliabilism) or the giving of reasons (evidentialism). Thus, Hetherington hedges his bet both ways and thereby makes it a non-issue for a gradualist. Fourth, Gettier's challenge to JTB. Hetherington eschews the use of "justified" for "support" in his generic sense and justificationism in favour of minimalism. Furthermore, he posits a spectrum of (fallible) knowledge that permits an agent to have knowledge even when the support is poor and misleads. This approach eschews the difficulties of the JTB model and meets the Gettier challenges. Fifth and last, the KK condition. Hetherington argues for an anti-KK thesis. He thereby recognises that an agent may still have knowledge even if it doesn't know that it knows.

There are a number of features of Hetherington's epistemic gradualism I wish to critically address as they have a bearing on my dealing with the PKG. First, there appears to be a fallibilist rational objective bias in Hetherington's theory of knowledge. By recognising different cognitive styles, a knowledge theory has to take into account different approaches to knowledge such as those which are at least not rational and/or subjective. This is especially relevant when one's notion of knowledge rests on contest and defeasible reasoning. Of course, there may indeed be a rational objective, albeit fallible, perspective on knowledge -- even one from which all others can be rightly judged -- but such a position and its cognates are best appreciated in relation to relevant alternatives which have got it less right or completely wrong. Still, it can be argued that Hetherington's generalised notion of good support and the spectrum of knowledge do seem to cover these epistemic possibilities. However, this is not immediately obvious. To grade them requires a working, if not settled, central system of values on which to judge support bases. It is not entirely clear that such a systems prevails, though I fully accord with the view that rational principles ought to form the basis of a common ground.

Second, there appears to be a scale mismatch between the confidence, certainty or probability of a belief (i.e. degrees of belief) and good support. This applies equally to degrees of acceptance if such a notion is upheld. Hetherington's spectrum of knowledge has the following range: $k \in [0, n]$ where n is not specified; however, it is supposed to correspond with other features prominent in epistemology. Given that we can have full belief we are entitled to think there is an upper limit. If probability is any guide then the range is [0,1]. However, with good support an upper limit is not so obvious. If support is based on reliability of source, it is possible to envisage an upper limit of (say) 100% reliability. If support is based on evidence (i.e. reasons, arguments etc.) then the logical possibilities might well be very large or infinite. If so, we may have to impose an upper limit – much like a threshold or benchmark. Again, the worth component of good support appears to have an upper limit that may be expressed in the range [0,1]. Overall, there is an apparent scale mismatch between degrees of belief and the degrees of (good) support that is supposed

to be associated with. Hetherington suggests that commitment and belief are just contributions to good support but this doesn't seem convincing. Indeed, it seems that the spectrum of knowledge -- based on degrees of good support – is made to do much work. There appears to be a conflation of belief (including its cognates), worth and support (including its cognates) into one scale of good support. This can be likened to a grab-bag of scalable concepts or "putting all one's bad apples in one basket". There may indeed be a deeper story to be told. And for that reason it doesn't seem entirely convincing.

Third, one consequence of Hetherington's theory is the dissolution of the belief-knowledge distinction, though he suggests all other familiar scalable attributes matches up with good support. Feldman [2002] tacitly and briefly addresses this concern while making comments on justificationism toward the end of his review of Hetherington's [2001] book *Good Knowledge, Bad Knowledge*. He explores some peculiar implications of Hetherington's view in the case of "a competitive election campaign". His criticisms are convincing, thought I can't go into them at this time. As I see it, the belief-knowledge distinction is made redundant; and therefore Hetherington is implicitly proposing a significant change to our language use of "belief" and "knowledge". I don't think that such a proposal can be sustained. While we can say "I believe p is true but I don't know that p is true", there is an intuitive appreciation that there is still a difference between belief and knowledge and that belief leads to knowledge. This difference has a use and is therefore readily put to use in our language. Hence, such a change to language use will have to confront a resistance not so much from psychological inertia related to habit change but to the utility of the belief-knowledge distinction. This is evident in Feldman's election campaign scenario. Without the belief-knowledge distinction, "belief" is superfluous and there is a reliance on "knowledge". It can be argued that such a position is *laissez faire* in attributing the status of knowledge to any claims.

Fourth and last, Hetherington's approach rests on a weak condition. The suggestion is that we have license to have the highest confidence in a position or claim with the highest good support. If you recall, this is the weak principle

used to define proof of a claim in section 4.5 of the previous chapter. According to the gradualist view, each (competing) claim counts as knowledge. The one with the highest good support has the highest grade of knowledge; and therefore it is the better knowledge. *Prima facie* this approach works; however, it can lead us into a state of false confidence and complacency. Take for instance a dispute in a court of law. Imagine being in a court which operates according to such a regimen. It is enough that the prosecution epistemically performs better than the defence for it to induce confidence that its position has possession of the truth. This situation is a serious concern not only epistemically but also ethically. No matter how low or poor the support basis is, the claim with the highest good support is the claim which is most likely true. It therefore seems prudent to put in place a required level of good support -- and associated confidence, probability, certainty etc. -- which is deemed acceptable by one's peers or the community at large. Such a move may be described as involving, as Rescher suggested in the case of knowledge, a quality-assurance [Rescher 1979] of deliberation in these matters. Thus, if neither position satisfies the required level then those concerned with legal or judicial decision-making have to reserve judgement.

5.2.3 Sufficient Reason and Benchmarks

The origin of the threshold theory (TT) of knowledge can be found in early Greek philosophy. Aristotle's notions of probable reasoning and (rhetorical) proof, including his attempt to reconcile dialectics and rhetoric, are part of that tradition. Rational notions of proof were put in place to ensure that competing claims were eventually and appropriately judged and decided upon. It is inspired by a jurisprudential metaphor that is critically discussed in section 3.2; and which accords with a logical version of the principle of sufficient reason put forward by Leibniz. However, it is Whately who overtly attempts to combine this principle and the notion of proof with the Platonic insight into the nature of knowledge.

One of the guiding principles of rationality has to do with the giving of good reasons for what an agent is committed to or believes in. Good reasons are at least logically correct, this is at least what it means to be reasonable. Leibniz takes this further. In a famous passage from *Monadology*, Leibniz [Sect.31-2 1714] states:

> Our reasonings are based on two great principles, that of contradiction, in virtue of which we judge that which involves a *contradiction* to be false, and that which is opposed or contradictory to the false to be true, and that of *sufficient reason*, by virtue of which we consider that we can find no true or existent fact, no true assertion, without there being a sufficient reason why it is thus and not otherwise.

This last principle is the principle of sufficient reason. Simply, nothing happens without a reason. There are different versions of this principle due to Schopenhauer [1813]. As dis/believing is something that happens, we may posit the following:

> Principle of sufficient reason (for belief). An agent is not doxastically committed to or believes (or even knows) p to be true unless there is (good or sufficient) reason to do so.

Clearly, this is an application of Leibniz's principle that is done in the spirit of Schopenhauer. A doxastic-epistemic application, which involves a sufficiency notion of proof, appears in an early theory of knowledge due to Whately [p.165 1857]. In *Elements of Logic*, he discusses belief and knowledge as follows:

> Knowledge implies three things:
> (1) belief;
> (2) of what is true;
> (3) on sufficient grounds.
>
> If anyone, e.g., is in doubt respecting one of Euclid's demonstrations, he cannot be said to know the proposition proved by it; if again, he is fully convinced of anything that is not true, he is mistaken in supposing himself to know it; lastly, if two persons are each fully confident, one that the Moon is inhabited, and that the other that it is not (though one of these opinions must be true), neither of them could properly be said to know the truth, since he cannot have sufficient proof of it.

Whately requires more than mere support or justification. He requires that the support for a position be of “sufficient grounds” in relation to an opposing position and satisfy some requirement of proof. It thus appears that Whately invokes a particular version of the principle of sufficient reason as regards the evidence for a claim. Whately’s notion of proof is like that found in courts of law. Indeed, a legal analogy or jurisprudential metaphor as a guide to understanding critical discussion and debate is recognised and applied by Whately [1846] in *Elements of Rhetoric*. As Ehringer [p.xix 1963] points out, with regard to the concepts of presumption and burden of proof, Whately was “the first to transfer [them] from the law of evidence into the general field of non-legal argumentation”.

Similar views are echoed by Mill. He was influenced by the teachings and works of Bentham [1834], especially his *Rationale of Evidence*. Bentham who practised law and wrote extensively on it. In *On Liberty*, Mill [p.26 1859] states:

> There is no such thing as absolute certainty, but there is assurance sufficient for the purposes of human life. We may, and must, assume our opinion to be true for the guidance of our own conduct....

This suggests that we may position a benchmark on a scale of certainty (or probability) which may be called a benchmark of sufficient certainty. This too is consistent with a jurisprudential metaphor.

A claim becomes knowledge when its degree of confidence, uncertainty, support etc. equals or exceeds a benchmark on a scale. Often this is expressed in terms of partial belief [Ramsey postscript 1928; Bunge 1999]. Partial belief is a graduated notion where full belief and no belief are extreme cases. Examples are not hard to find. Some claims regarding one's mind are treated as being self-evident and therefore having full certainty or at least a degree of uncertainty close enough to this. Alternatively, when we express an opinion it may not be supported by argument or evidence. In this case, we don't give reasons because we don't actually have any. The claim is *prima facie* not a belief or else

it is merely the starting-point for a belief. Of course, there may be passional bias in its favour; otherwise, there is no intelligible basis for expressing it in the first place.

Critical Appraisal. The requirement of a benchmark of sufficiently strong good reasons – which, as an aggregation, can be called an establishment or proof – is not without criticism. Here are the main concerns:

(1) Aside from trial-and-error in use, there is no certain, assured basis on which to draw a line.
(2) It is not immune to error arising from incompetency, inadequate disclosure, deceit or the delusion of a good job done.
(3) Given (1) and (2), the assertion of so-called knowledge can turn out to be wrong down the track.

I think that these concerns are more-or-less addressed by the tradition of forensics that rests on fallibilism and was briefly discussed in chapter 3. For clarity, I shall briefly comment on each. First, there is the concern as to where to draw the line. Where should the benchmark be drawn? When does an agent have enough confidence, certainty, evidence (ie. support, warrant etc,) or even reliability such that it can decide that it has knowledge? This may be called the problem of sufficient reason. The other theories are not plagued by this problem. For LT if an agent doesn't have full certainty, confidence, evidence etc, then the claim can't be knowledge. And for GT (at least for some versions) any claim that is at least a true belief counts as knowledge; however, it is important to seek out the one with the best support available. The only solution to this problem may be a balancing act of factors learned through experience. The benchmark can’t be placed too low lest it can’t exclude alternatives or too high lest it be unachievable by any competing position in a debate. Second, there are concerns over error. I don't think that there is a simple solution to this problem for those who adhere to a benchmark approach. Perhaps we have to rely on the trials and tribulations of experience to show us a better way. By trial-and-error it is possible to determine an appropriate code of conduct, including a standard of

proof for a given context and domain; and possible abstract general guiding principles. In the contesting of positions within a community, trial-and-error can help us to decide on the appropriate practices that can improve our chances (say) in reaching the truth of the matter. What is relevant and significant in this regard is the tradition of forensics. Third and last, there is a concern over a wrongful decision. Forensics has recognised the need for a re-open clause as a way of dealing with this situation when it occurs. Overall, a benchmark approach can be made more-or-less to work by adopting principles relating to objective fallible critical rationality. At the very least, it gives us a fallible rational basis for decision-making with regard to claims, which may be used to inform the actions of an agent or community.

5.3 Debate, Proof and Knowledge

The view that persuasion, reason and knowledge in discourse are commensurable notions goes back to Aristotle, Cicero and others – it was even entertained by Plato. In contemporary times, this ancient insight has developed into a movement which tries to reconcile rhetoric and epistemology. Such a resurgence appears to have started with an article by Scott [1967; 1976] wherein he critically examines the idea that knowledge can arise through rhetorical activity in discussion and debate. Inspired by Scott, this endeavour is taken up by Cherwitz and Hikins [1986] in their *Communication & Knowledge*. In this work, they are interested in developing what they call rhetorical epistemology that, in some respects, is associated with social epistemology.

As Cherwitz and Hikins [p.11 1986] point out: “in contemporary times the symbiosis between rhetoric and philosophy has become more directly noticed than ever before”. Like myself, I think they take “philosophy” to be the primary source of classical dialectics and its focus on knowledge through rational discussion and debate. Having critically examined three attempts, Cherwitz and Hikins [p.66 1986] characterise “the rhetoric/dialectic distinction” as follows:

> .....rhetoric describes reality through language..... We [also] claim that dialectic is a kind or form of rhetoric. It.....is the purest form of rhetoric, owing to the fact that it is intentionally a faithful description of reality through language. ..... Rhetorical discourse can occur without those attributes, as when a speaker or writer purports to describe reality, but the description is accidentally or deliberately unfaithful to reality as the rhetor understands it. We reserve the phrase dialectical rhetoric for those descriptions of reality that are presented as intentionally faithful to the rhetor's own conception of reality

With this distinction in mind, they undertake "a philosophical investigation of communication and its function in [the] human acquisition of knowledge" [Cherwitz and Hikins p.4 1986]. For them "rhetoric or [the] persuasive potential" is "an integral part of nearly all" communication. They also point out that verbal and non-verbal forms of persuasive communication may be present in discourse [Cherwitz and Hikins p.39 1986]. Given this, their ".....approach to epistemology.....is grounded in the contention that communication and argument[ation] are instrumental in producing knowledge....." [Cherwitz and Hikins p.39 1986]. Although not exclusive, coming to know something is a rhetorical activity [Scott 1967, 1976; Cherwitz and Hikins 1986]. Ultimately, Cherwitz and Hikins [p.92 1986] settle on a notion of knowledge as "persistently justified true belief" where persistence is a state of having sufficient relevant justification that enables an agent to attain an open analytical certainty of a claim. Therefore, it is possible to speak of "degrees of conviction" [Cherwitz and Hikins p.31 1986].

Generally, there are some points of contention. For them, discourse involves messages in communication which are verbal in nature; that is, spoken and written words. Rhetoric itself is a kind of discourse. Cherwitz and Hikins [p.65 1986] state:

> Rhetorical discourse is whatever discourse describes reality through language, but there are kinds of discourse in which reality is not described. Much fiction, for example, does not purport to describe reality. The same could be said of much poetry. Where this is true, the words "poetic" and "fictive" become appropriate modifiers of the term discourse.. There are, however, many instances where poetic and fictive discourse do, in whole or in part, describe reality, and to that extent rhetorical also

> becomes an appropriate modifying term, as when we are inclined to refer to a poem or novel as “rhetorical poetry” ir “rhetorical fiction”.

I find this account of rhetoric rather confused. Granted, rhetorical activity occurs in discourse; and there can be rhetorical discourse. To my way of thinking that is indicated by the presence of persuasion in discourse; more precisely, the agent has the intent and/or attempts to persuade in discourse. They too make reference to persuasion elsewhere. Persuasion can be about the truth of things; and this is carried out with the use of language. What I find confusing is their emphasis on alethic inquiry through language use as defining rhetorical activity rather than persuasive conversation. It seems to me that persuasion *is* the driving-force of rhetorical activity whether the interest is in truth or otherwise. Still, I found myself sympathetic to their ideas on three fronts: their attempt to embed the knowledge concept in a communication-theoretic framework; their emphasis on objective fallible rationality, though I’m inclined to emphasise persuasion along with Reason; and their structuralist ontology of relationality that governs their conception of things. In this way they hope to unite, albeit an objective fallible rational, epistemology with rhetoric.

Now I wish to present my view on knowledge – the open contested certified true belief (CCTB) model – that also combines rhetoric, epistemology in a dialectical framework. It is contrary to Popperianism e.g. falsificationism in science and Pyrrhonism. Essentially, the model was developed as a dialectical-rhetorical approach to knowledge. It thereby enables a conceptual bridge to be built across the PKG. It is a version of the threshold theory that is based on

(1) The parameterised (sigmoidal) claim-persuasion relation with thresholds (CPR-T).
(2) The forensic approach to the rational dialectics of alethic inquiries and its reliance on opposition, persuasion and Reason in discourse.

As I see it, basis (1) permits a more formal approach to basis (2). This theory starts with conflict: the contesting of positions on an issue in discourse. That

conflict can be played out in mind and/or community to produce knowledge from a claim or belief. Though the generality of the open CCTB model is such that it can accommodate all types of cognitive styles, the epistemically preferred version is underwritten by commitments to objective fallible rationality and the primacy of Reason. The generality of the open CCTB model is useful as it enables agents, especially rational ones, to model and profile other agents with similar or different styles. Finally, as I indicated toward the end of section 5.1.1, a well-developed theory of knowledge is intellectually obliged to address the outstanding problems of its discipline. At this time, I have confined myself to the Gettier problem, the source-evidence controversy and the problem of epistemic improvement because they bear directly on bridging the PKG. Suffice it to say that I endorse an anti-KK thesis and posit pragmatism – on the basis of virtuous self-affirmation – as a common ground to address the problem of the criterion.

5.3.1 Sources and Influences

One concern that bears on any theory of knowledge is the source-evidence controversy, which is also known as the internalist-externalist debate. On what basis do we have beliefs? The controversy arises due to the different proposed answers to this question. It will become apparent that this concern is important to bridging the PKG. I think the issue is due to confusions regarding sources of claims (beliefs); and giving reasons and arguments for a belief.

I now elaborate the key positions. Generally speaking, they are:

(1) Evidentialism. The basis-of-belief for a claim is determined by the (available) evidence an agent has in support of it [Hetherington Ch.8 2003]. That is, the basis for belief/knowledge is the reasons, arguments etc. given in its favour.

(2) Reliabilism. The basis-of-belief of a claim is the reliable process of a source. A source produces knowledge if "it is likely to give us accurate views regarding" [Hetherington p.128 2003] some aspect

> of the world. That is, an agent's basis of belief/knowledge is some reliable process for obtaining it.

Both *prima facie* seem to be reasonable and plausible positions to take. In the context of the JTB model, position (1) requires that a true belief has to be justified, supported, warranted by some evidence i.e. reasons, arguments etc. However, where position (2) is concerned, it is not so clear; though it can be said that the claim-persuasion relation with thresholds (CPR-T) doesn't necessarily require reasons, arguments or evidence as the basis-of-belief associated with support strength. However, as previously indicated, I concur with Cherwitz and Hikins [1986] who recognise that there are other ways by which an agent can get knowledge. Here, I show that through a notion of "generalised support" or certification, the CPR-T can be applied to both sources and evidence. However, this is not enough to settle the issue. I then develop a source-evidence compatibilism that seems to do the job while still emphasising the rational centrality of persuasion in relation to claims, beliefs and knowledge.

Reliabilism: Sources and Reliability. First up, I critically elaborate reliabilism. For better or worse, sources of belief and knowledge identified by epistemologists include: observation i.e. perceptual experience e.g. eyewitness; the mind's eye i.e. consciousness and/or introspection; Reason; testimony; authority e.g. expert opinion; mystical insight; intuition e.g. "gut feeling"; divine revelation; extra-sensory perception (ESP); faith; and self-evidence. Others include hearsay, innate ideas, memory and even the media. It is possible, through conceptual analysis, to distinguish basic and composite sources. Here, I merely list them. I recognise that some of these sources are contentious; and the debate between rationalists and empiricists over the origin of beliefs and knowledge still remains unsettled. The worth of sources and associated evidence obtained from them is an on-going concern in the epistemic development of agents. In law the rational worth of the various sources of evidence (in their sense) is covered by the rules of evidence for a given jurisdiction.

Ramsey's notion of knowledge [p.258 1931] is based on belief, causation and reliable process. In some ways he anticipates Popper in his views. Mellor [p.5 1978] describes it as follows:

> ..... Problems of supposing belief in scientific theories [say] to be objectively justified have led Popper and his followers to detach the concept from that of belief. Not so Ramsey, who retains the more usual conception that, to be known, propositions must at least be believed. But his brisk and memorable treatment of knowledge.....does anticipate Popper and recent writers in severing the link between knowledge and justification, and so escapes the classical dilemma of having to admit either an endless regress of things known or some self-justifying foundations of knowledge. Knowledge for Ramsey is not justified true belief but rather true belief obtained by a reliable process, ...the process being.....causal.....

Further insight can be obtained by applying an artifact (or device) metaphor. Sources of information (and knowledge) can be thought of as analogous to instruments and devices. Given this, they may be attributed the feature of reliability. It's appropriate to look to the tradition of reliability theory in engineering. Apropos of this I refer to an account by Belyaev and Gnedenko [pp.7274 v.8 1992] who state:

> The reliability theorist introduces quantitative indices of reliability by constructing suitable mathematical models. In doing so (s)he must take into account consideration of such factors as the purpose of the system, the condition under which it is to operate, and also economic factors. A broad range of mathematical methods, chief among which are probability theory and.... statistics, are used in reliability theory. ..... Other widely used methods are those of optimization theory, mathematical logic etc.
>
> The concept of reliability includes the following elements:
>
> (1) freedom from failure;
> (2) long life;
> (3) amenability to repair.
>
> Not infrequently, however, it is the first element above that has the decisive role. For example, the third element is quite unnecessary when dealing with disposable commodities.
>
> A fundamental notion in reliability theory is that of a failure, ie. a gradual or sudden loss of the ability to operate.

They then proceed to a general "formalized description of this notion". "The reliability theorist then employs various classes of functions" in this context and appropriate to the situation. What is "the most important reliability index of a..... system is the probability of failure-free operation for a time t.....[and] the failure rate".

What is relevant and significant here is the notion of failure. It is open to different though related interpretations. This has become evident with the emergence of computer systems and networks, and even telecommunications systems before them. Here, it is well-accepted that it is necessary to distinguish hardware [Mathur pp.773-777 2000] and software [Bastani and Ramamoorthy pp.1638-1641 2000] systems. With software reliability the emphasis is on inputs and outputs of the system. Bastani and Ramamoorthy [2000] then state:

> Ideally, we would like to verify that a program is correct. However, besides the practical difficulties encountered in applying ..... formal verification ..... to ..... programs, they cannot cope with the possibility of specification errors. An [other] ..... approach is to use statistical methods to estimate the reliability of the software based on the outcome of program testing.
>
> Here, ... reliability is defined as the probability that a software fault that causes deviations from the required output by more than a specified tolerance, in a specified environment, does not occur during a specified exposure period. There are three different methods of estimating.....reliability, namely, on the basis of its failure history, its behavior or for a random sample of [values] taken from its input domain, or the number of seeded and actual faults detected..... where seeded faults are those that are deliberately inserted into the program.

They proceed to distinguish fault-counting and non-fault-counting models, Also, they point out that the sampling techniques used for software are like those used for hardware systems, however, with software systems, "the program is tested with a random sample of [values] from its input domain".

How then is this relevant to sources of information and consequently opinion, claim, belief and knowledge? Well, according to a device metaphor we can treat

these sources in an analogous way – as-if they are technological components or systems. They are information systems [Dretske 1981] which can be conceived as hardware-software systems. This is consistent with the content-process conception I have applied to intelligent systems, including those with minds. Being open to their surroundings, these systems can engage in I/O relations (interactions) with the rest of the world. And, like technological systems, they are prone to failure and can he attributed the feature of reliability.

The attribute of reliability may be specified (say) as a percentage n% or a value in the interval [0,1]. Apparently, reliability can be couched in terms of the probability of chance. In the marketplace of instruments and devices, there can be a variety of versions, some being better than others. Indeed, some may vary in their reliability; that is, some are more reliable than others. Devices can he combined and integrated to make other devices with their own reliability. As for natural sources of information, they can be thought of in similar fashion. For example, some agents have better visual perception, better Reason etc. than others. That capability may be open to further improvement. Furthermore, it can be envisaged that its reliability can be determined. For instance, eyewitness testimony relies on an amalgam of perception, memory and perhaps communication. Research has been done on the operation and reliability of this intelligent capability, especially given its important role as a source of evidence in court cases.

Evidentialism: Reason, Argument and Evidence. Now I critically elaborate evidentialism. It is important to recognise that this view relies on a commitment to Reason and principles of rationality. Simply stated, whatever an agent is committed to or believes, there is good reason/s to be this way. Conee and Feldman [Suppl. p.160 1996] state that

> Evidentialism is the view about epistemic justification that identifies the extent to which a person is justified in believing a proposition with the extent to which the evidence the person has supports the truth of the proposition. Other doxastic attitudes such as withholding judgement and denying are also justified by the character of the person’s evidence. .....

> [Generally,] the evidentialist view is that....belief is justified because the evidence possessed supports the proposition.

What was stated with regard to justification, warrant and support in section 5.1.3 applies here; as does the different uses of "evidence". Also, as previously stated, rational agents are justified to believe a claim based on the net persuasive support strength of its case, which is strategically developed in discourse.

Source-Evidence Compatibilism. Having reviewed each position, a comparison leads to a dilemma. On the one hand, it makes sense that we require reliable sources of a claim p. For example, the adaptive success of animals in their ecosystems suggests that they have, not just mere beliefs about the world but knowledge of the world. Giving reasons doesn't seem necessary. On the other hand, it makes sense that we require good reasons for a claim p. For example, human beings usually require that reasons be given. If both seem right, perhaps we are only seeing parts of a bigger picture. In seeking a bigger picture to accommodate both positions, I propose a source-evidence compatibilism. That there is a connection, if not dependence, between sources and reasons, appears to have been recognised and made use of by Bentham [p.14, Fn. p.17 1827]. He described this relationship as between the probative force (support strength in an alethic inquiry) of argument and evidence; and the trustworthiness (reliability, including credibility) of a source. For him both probative force and trustworthiness admit of degree; and include the possibility of zero. Furthermore, this involves "the whole mass of evidence being taken together" and in the presence of counter-evidence if it arises. Still, I think there is more to be said on the matter. As section 2.2.2 shows, (psycho-social) influence is crucial to forming and shaping the opinions of agents. Having a source of propositions is not enough, especially where two opposing propositions come to mind via thought or conversation. What is required are some influences to impose a preference for one proposition over another; in short, the agent is compelled to form an attitude to a proposition thus making it an opinion or claim. In this instance, an idea or opinion or claim. Hence, both

sources and influences are crucial to claims, be they beliefs or ultimately knowledge.

Reconciliation of Probabilities. In my view, an implication of source-evidence compatibilism is a reconciliation of probability conceptions. The possibility is raised by Ramsey [p.159 1926] who states:

> It may be that, as some supporters of the frequency theory have maintained, the logic of partial belief will be found in the end to be merely the study of frequencies, either because partial belief is definable as, or by reference to, some sort of frequency, or because it can only be the subject of logical treatment when it is grounded on experienced frequencies.

This he gives as another reason for inquiring into the nature of degrees of belief or what he calls partial belief. What then is the connection between these two notions of probability? The relation is evident in the prior account of the reliability of sources of information (and knowledge). This account suggests an objective rational approach to obtaining supports strengths by way of the reliability of systems – be they perception, reason etc.

In section 4.2.2, cogency is used as the rational measure of persuasive support strength for an argument. Both the net uncertainty of premises and the inferential bond of an argument contribute to its cogency. Ultimately, each rests on reliability. In this way, the alethic probability of a claim is related to the tychic probability associated with reliabilities that underwrite the net cogency of the case, which in turn is based on the cogency of each of its constituent arguments. We therefore have incremental values for measuring and tracking the laying out of one's ground or the building of a case from arguments. As previously discussed, reliability measures are usually based on the probability of chances. Thus, using a reliability-derived persuasive support strength, it is possible to determine an alethic probability (i.e. the probability of truth) by way of the graph of the CPR-T in use, which ultimately depends on tychic probability (i.e. the probability of chance).

5.3.2 Persuasion, Reason and Discursive Styles

Is persuasion crucial to the production of beliefs and knowledge? Not necessarily, so it seems; it depends on the nature and circumstances of the agent and community. Where rational agents are concerned, persuasion is surprisingly central to production. Rational agents are governed by Reason and principles of rationality that give it character.

Influence, Belief and Knowledge. Persuasion is a kind of psycho-social influence. To fully appreciate influence and persuasion, it is necessary to recall what was said about influences in section 2.1. They were accounted for by positing a hedonic-hormic infrastructure existing in the cognitive architecture of mind. Simply stated, attitudes are determined by interest satisfaction, be they innate or learned. An attitude – that is, acceptance, withholding or rejection – toward a proposition p can be determined by psycho-social influences or persuasion in discourse. Describing them as psycho-social covers psychological effects due to interacting with the world e.g. things in Nature, artefacts etc. as well as other agents and/or community. Simply stated, there are three modes of psycho-social influence. They are:

(1) Experience. A proposition p becomes collaterally valued, preferred and habituated (or otherwise) via interest satisfaction arising from experiences occurring concurrently with an agent's action in the world, including those involving other agents.
(2) Appeals. A proposition p becomes valued, preferred and habituated (or otherwise) via interest satisfaction arising from appeals in discourse.
(3) Arguments. A proposition p becomes valued, preferred and habituated (or otherwise) via interest satisfaction arising from reasons, arguments or evidence in discourse.

Both (2) and (3) rest on the appeal corpus of an agent; (3) is a rational kind of (2); also, (2) and (3) can involve linguistic and non-linguistic forms of

expression. On this basis, we can distinguish persuasive and non-persuasive influences, which I consider in turn.

Evolution and Pragmatic Reliabilism. Firstly, I turn to non-persuasive influences. This is most evident in non-human animals and human children. Non-human animals are successful in surviving in their respective ecosystems. Indeed, some are better than others in doing so. What contributes to this success is having good beliefs and knowledge about their ecosystem – even if there are evolved innate contributions. For instance, knowing their local environment can enable a prey to escape a pursuing predator; also, observing and coming to know their prey can make predators successful in capturing their prey. Furthermore, all of us as children don't have to be persuaded by our own minds or the minds of others about the things around us – especially the presence and importance of our parents. It comes naturally to us. Why is this so? It seems reasonable and plausible to suppose that it is innate. Either we have an evolved built-in propensity to initially accept – even as a default presumption – that the ways of knowing which we are born with are reliable; and/or in-built adaptive mechanisms enable the agent to compensate for error and gain confidence in their sensori-perceptual systems. Still, experience eventually teaches us that their reliability is not necessarily perfect; that it doesn't come with a 100% gilt-edged guarantee. Depending on our emerging and developing cognitive style we may be inclined to question our natural tendencies to presume. When we existentially re-assess the reliability of our ways of knowing, then we are subject to persuasion, which is examined further on.

What makes this work? Due to Darwin, today we can explain this by invoking evolutionism; in particular, the theory of evolution by natural selection. Natural selection occurs over agents, that is, the members of the species. That selection includes aspects of the agent, including their minds and therefore cognitive-ecological capabilities. The outcome of natural selection is "the survival of the fittest" or more precisely the survival of the best adapted to the circumstances. Generally, what underlies being the "best adapted"? I propose that it is pragmatic reliabilism, which applies to adaptive development

(ontogeny) of the agent to its environment and the evolution of species (phylogeny) as a whole to its environment. It is not possible at this time to critically argue and establish this view, though what follows gives credence to this view. According to Peircean pragmatism, what works is what is useful to achieving an end. For example, what works in survival is what is useful in successfully achieving survival. This is determined by the consequences of processes, including actions. However, this is not enough. Success may be a one-off or due to mere luck. An agent or species has to be able to rely on those adaptive features, capabilities etc in the future for survival under similar adverse circumstances. Hence, they have to be adequately or sufficiently reliable.

Emergence of Language and Persuasion. Now I turn to persuasive influences. With the emergence of language use came the new capability of persuasion. Now the self and others could pursue interest-satisfaction through the use of appeals, the instruments of persuasion. Where discourse - and especially debate - are concerned, the thing is a proposition or theory p and the influence is called persuasion. Persuasion involves the use of appeals in social exchanges e.g. conversation, public speaking etc.; and, it may be directed at others and perhaps even the self. Where an agent is appealing to its opponent and audience, there are two sides to consider. On the one side, there are the interests in persuasion -- to persuade persuadants to the persuader's position. On the other side, there are the interests of the opponent and audience. They are essentially committed to interests which may be the target of persuasive activity. Thus, the emergence of language use introduces another channel for inter-agent influence. This can have a profound effect on the production of beliefs and knowledge – not to mention different views on the production itself.

Common Ground. Clearly, what is required is a common ground for the production of beliefs and knowledge. A common ground is a recognised prevailing dominant style for regulating and judging the conduct of agents in a community. In his account of epistemic gradualism, Hetherington tacitly recognises a common ground. He proposes a “spectrum of knowledge”, a scale for degrees of knowledge. This scale is based on a generalised notion of good

support. Other notions like degrees of confidence, belief, probability, rationality, reliability etc. correspond to this. Though it is not entirely clear how they are determined, the judgements of good support rest on the extent of any of these contributions. This includes the extent to which the contributions conforms with objective fallible critical rationality. I'm sympathetic to this rationalism; and what follows does not necessarily mitigate this view.

As to a common ground, we can take a lesson from Nature. Whether or not there is ultimately a choice in this matter is debatable. The lesson has to do with pragmatic reliabilism. For instance, according to Mill [p.30 1859] the worth of opinions or claims is best judged on the basis of utility. He states:

> The usefulness of an opinion [or claim] is itself a matter of opinion: as disputable, as open to discussion, and requires discussion as much as the opinion itself. .....

He goes on to say:

> The truth of an opinion is part of its utility. ..... In the opinion, not of bad men, but of the best men, no belief which is contrary to truth can be really useful.

Peirce was greatly influenced by Mill. According to Peirce, the judgement of usefulness is born out by the consequences of its use. Furthermore, as stated previously, that usefulness includes being at least adequately reliable in respect of that usefulness; in short, it cannot be a one-off or due to luck. Through a long self-correcting process of intellectual development, guided by pragmatic reliabilism, an agent or community accumulates a body of regulatory principles that regiment conduct. This has lead to the primacy of Reason and associated principles of rationality such as (say) evidence-based critical rationalism or its cognates, which was briefly discussed in section 3.2.2. This rational regimen more-or-less guides science and mathematics

Reason and Rational Persuasion. In section 3.1.2 it was established that Reason can be a source and an influence. Current epistemology supports this

stance; indeed, theories tend to involve the beliefs and knowledge of rational agents. Appeals to Reason i.e. reasons, arguments and evidence only work because an agent is committed to some view of Reason and its importance in forming opinions or claims and ultimately making commitments to them. Rational persuasion of others and perhaps even the self rests on commitment to Reason and principles of rationality. This is enacted by means of arguments and ultimately a case (rational ground). In section 4.4.1, the (net) persuasive support strength of arguments (and case) is based on cogency. Basically, a good Reason can only influence and be influenced by the use of arguments in discourse. They do so by appealing to the rational interests of an agent's Reason and/or appeal to them to commit to standards of Reason. There may be collateral effects on the passions generally; however, they are usually resisted by Reason as a point of rational self-discipline.

We can get some insight into rational persuasion by critically examining a typical dialogue where reason and perception (say) are involved as knowledge sources. But let us suppose that the agent had directly observed this occasion. Being a stickler for facts, I might have engaged my friend in the following way:

A: There was a full moon last night.
B: You know this.
A: OK. I'll humour you. (Pause) Yes.
B: How so?
A: I observed it.
B: I know you are an honest person. Besides, you have no reason to deceive me on this point. But how do you know your claim is really true?
A: .....Because my claim was produced by a reliable process.
B: But what makes it a reliable process?
A: The reliable process was carried out by my perceptual system, in particular the one related to vision. It is reliable because it has a long-standing track-record of success in correctly informing my actions in the world.

B: Surely, you're fallible. Sometimes you get it wrong.

A: Of course, Like any agent I make mistakes. But in many situations my perceptual system gets it right. I know this through the success of my actions in pursuing my interests.

The key points are:

(1) The use of observation in obtaining knowledge that p.

(2) The use of reason to warrant or support (1).

For an agent committed to Reason and rationality – especially the giving of reasons for one's commitments and beliefs – the use of observation as a reliable process for obtaining knowledge has to be based on appeals to Reason. Previously, I suggested that knowledge does come from reliable processes. Reason can be one of many types of reliable processes for producing knowledge.

However, an agent committed to Reason and principles of rationality is committed to principles like the principle of sufficient reason and related ones. For a rational agent those reasons can remain tacit or be made explicit. At the very least reasons are possible in their cognitive architecture. However, as part of rational self-knowledge the agent has to convince itself to accept its observations as knowledge. It does this by reasoning in the context of its own ecological theory of mind; especially, as it relates to the self. So, rational agents have to rationally persuade and convince themselves about having knowledge even though it is possible to have knowledge without the persuasions of reason under the regimens of other cognitive styles. The implications for the intellectual development of rational agency is clear. Even though an agent is naturally inclined (?) to accept and truly believe what it observes, remembers, receives (by communication) etc.; it is rationally committed to coming up with sufficient grounds for doing so. Being reasonable – the getting, having and giving of reasons – is one of the hallmarks of rationality.

5.3.3 Knowledge: Belief with Proof

My proposed rational theory of knowledge is the open contested certified true belief (CCTB) model, which is underwritten by a mechanism of mind that operates according to the CPR-T conjecture. This proposal has affinities with rational theories of knowledge based on Bayesianism and its cognates; however, it is actually an alternative to them.

As mentioned in section 2.3.3, rational belief change and revision, at least in pro-science circles, is understood according to Bayesianism [Bayes 1763-64] and more recent modern versions like Dempster-Shafer theory of evidence [Dempster 1968; Shafer 1976] as well as other theories that attempt to address their failings. Bayes [1763-64] developed his theorem in the posthumous *An Essay Towards Solving a Problem in the Doctrine of Chances*. It was published by Price, an associate of the author, in two memoirs that appeared in the journal *Philosophical Transactions*. These theories are versions of probabilism to wit: an agent's degree of belief is measured by probability. According to Bunnin and Yu [p.73 2004], a Bayesian theory of knowledge makes two important claims:

(1) A (claim or) belief p is justified (or supported) if and only if the probability of p is reasonably high; and
(2) The probability for changing epistemic justification (or support) through the acquisition of new data can be calculated and predicated according to the probability calculus, including Bayes' theorem

Such theories rest on the probability calculus, which is the foundation of statistics. There are a number of difficulties associated with current theories. Firstly, such theories don't cope well with old evidence and the initial assignment of probabilities; that is, the initial value problem. Secondly, there is no guarantee that a convergence of probability estimates by different agents will occur over time. Thirdly, some old evidence may already be accepted with very high or even full certainty. For example, the perihelion of Mercury was "firmly

established" well before Einstein used it to support his general theory of relativity. This effects the assignment of probabilities. Fourthly and finally, technically speaking, non-Bayesians consider its application to be quite limited. What is proposed here is an alternative view. It is based on a probability conception that is not directly based on the notion used in the probability calculus, though I previously discussed a reconciliation of probability conceptions. Like Bayesianism and its cognates, the claim-persuasion relation with thresholds (CPR-T) proposal has a problem with initial values; however, this can be treated as an aspect of learning and adaptation of the agent's CPR-T to its circumstances. In my view, any theory that deals with opinion change and revision can't avoid this difficulty because it's a fact of life for finite, fallible agents, even exquisitely rational ones. Hence, the initial configuration of the CPR-T is arbitrary, though some genetically-determined initial setting might be present. Furthermore, the OPR-T for an agent is for some opinion p; and this is independent of any alternative q and its associated alethic uncertainty.

Sufficient Reason. Now I return to my open CCTB model. It is tied to the principle of sufficient reason which I briefly discussed in chapter 3 and in an earlier section of this chapter. There is a version of this principle which is appropriate for defining knowledge. To recall, in the *Elements of Rhetoric*, Whately [Fn. p.164 1853] appears to capture this when he states: "knowledge.....implies.....firm belief ..... of what is true, ... on sufficient grounds". Essentially, he ties an agent's doxastic confidence in and sense of attitudinal certainty for a belief to having "sufficient grounds". His use of "firm belief" seems to suggest that a belief that attains knowledge status involves a kind of conviction.

Previously, I discussed an agent's confidence in holding a commitment or belief. This confidence is associated with the degree of uncertainty of the belief – of it being more or less certain. Baldwin [pp.602-003 v.1 1902] ties this to knowledge in the following way:

> Knowledge is also used in contrast to the form of mere opinion sometimes called belief. In this application it signifies certitude based on adequate objective grounds. There may be belief or subjective certitude without adequate objective foundation.

There is much to note here. Sometimes opinion and belief are used interchangeably. At least we might say that opinion is belief at the lower end. What (degree of) certainty an agent has is tied to adequate grounds. This seems to suggest a support basis with sufficient support strength and an associated threshold. Finally, this view recognises knowledge may have a subjective or objective basis. All this fits well with the theory I develop here.

Furthermore, in keeping with my view, Klein [p.267 v.5 1998] states: “our true beliefs must be based upon sufficient (good) reasons in order to be certifiable as knowledge”. His “sufficient (good) reasons” suggests the application of criteria drawn from some value system of the intellect or Reason. Not any reason will do – it has to be a good one. He implicates value judgements concerning the worth of reasons. Sufficient (good) reasons certify a belief as knowledge.

Apparently, the value system that enables a value judgement of worth covers two things:

(1) Quality of reasons (or evidence).
(2) Quantity in the (net) strength of reasons (or evidence).

Thus, the value system is tantamount to a standard of proof whereas the reasons constitute a proof of a claim. Overall, this fits well with the CPR-T which is required as an account of certitude and certification as they apply to this relation.

Certitude, Certification and Proof. Now I return to strictly giving an account of knowledge in terms of the CPR-T and the principle of sufficient reason as expressed by the likes of Whately, Baldwin and more recently Klein.

What we require is some belief that is somehow certified as knowledge according to some basis-of-belief that amounts to a proof. Now certification is a fallible practical notion, especially in this age of mass production and consumerism. Typically, there is some standard (including benchmark) of quality-assurance [Rescher 1978] that has to be met before a thing is certified. Essentially, a thing is certified if it conforms or complies with a (rational) standard of worth.

But why certification rather than support? Generally, it seems more fitting for a number of reasons.

(1) Certification has an applicability equal to or greater than generalised good support in characterising a basis-of-belief and consequently a basis-for-knowledge.
(2) Certification emphasises criteria based on values that constitute a standard.
(2) Certification highlights the fact that it leads to the attributing of some degree of uncertainty to a belief to the point of certitude; and instilling a corresponding level of confidence in the agent.

Given an acceptable method of certification of a claim (say) entitles us to have some appropriate sense of certainty in it. For debates this can be understood in terms of attributing some certainty to and therefore having some confidence in a position or its claim.

Once the claim of a position is certified, what does it mean for it to have certitude? Generally, commonsense suggests that agents and communities prefer certitude in rather than doubt over the truth of a claim. Given that full certainty is not always possible, Russell [1926] in his account of knowledge uses (vague) levels of certainty in defining knowledge in different disciplines. With this in mind, I use a wide sense of certitude. A narrow sense of certitude is full certainty whereas a wide sense is a partial certainty that includes being certain enough. Partial certainty, of course, can include full certainty or no

certainty as special-cases. Where the benchmark of certitude is placed depends on the context, circumstance and domain of the information. Overall, both certification and (wide) certitude seem more fitting to a theory of knowledge based on a CPR-T that relies on the attributes of degrees of uncertainty and support strength.

In the context of CPR-T, we want (hopefully) some rational basis-of-belief that can ultimately certify a belief as having (weak) certitude such that it can be called knowledge. The kind of support (basis) for certitude of a belief is a proof. As certification suggests, there is no guarantee that a standard of proof (SOP) can be met at the time, if ever. If certification is achieved then the belief attains certitude by virtue of a proof. This proof is a ground (of belief) that has a net support strength which is greater than or equal to the benchmark of proof (BOP) in the CPR-T. Clearly, as a consequence of the notion of good support, this is a generalised notion of proof. What does this entail? A ground (or case) is good if

(1) It is sufficient in weight (net support strength) as to constitute that required of proof;
(2) It consists of reasons (including arguments) which satisfy conditions of acceptable forms of reason(ing); and
(3) Its premises come from acceptable sources of information.

Each condition relies on some acceptability requirement. Such requirements are based on value judgements of worth – that is, what is good, has merit etc. – in a system regimented by fallible objective rationality.

Regimentation of the CPR-T. The CPR-T – especially its benchmark of proof (BOP) – has to be fine-tuned to work well. Getting it right for the context, circumstance and domain involves a juggling act of factors relating to the (parameterised) CPR-T. They include:

(1) Support regimen. The guidelines for an intellectual value system concerning the rational worth – merits and demerits – of support bases.
(2) Support-strength schedule. The guidelines for the assigning of support strengths to support bases.
(3) Belief-support curve. The guidelines for an appropriate form (or shape) of the graph of the CPR-T.
(4) Benchmark of proof. The guidelines for the positioning of the thresholds of rational satisfaction of (3) above.
(5) Preponderance and decision-making procedure.

All such constraints can be directed to maximising the chances of targeting the truth of the matter while minimising the investment of resources i.e. time. effort, monies etc. In my view, this is highlighted in law by institutional provisions such as "judicial rules of evidence". Goldman [p.746 1995] offers this example:

> Exclusionary rules might actually serve the cause of truth or accuracy in judgement if the excluded evidence would tend to mislead or prejudice jurors.

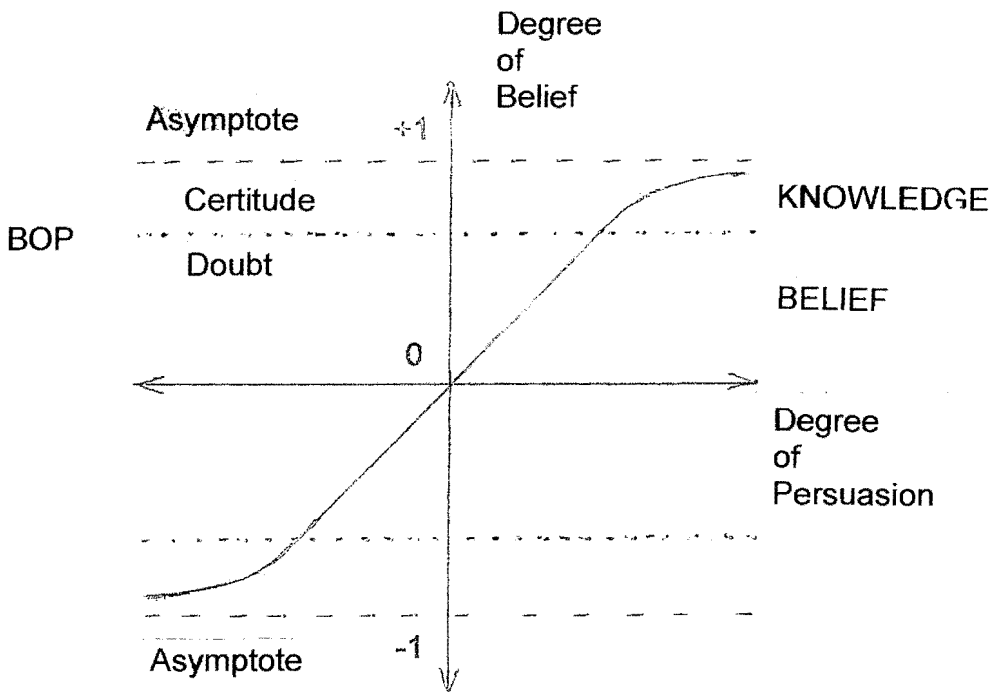
We can also add that such rules improve the workings of alethic inquiries in targeting the truth in an expeditious way.

Knowledge Defined. I'm now in a position to offer a working tentative definition of knowledge in the context of the open CCTB model. That definition is:

> Knowledge $=_{df}$ A claim (or belief) p of an agent or community becomes knowledge when its degree of net alethic uncertainty (i.e. alethic probability) in the CPR-T attains the benchmark of sufficient net alethic uncertainty (certitude) through being certified by a ground or case with a corresponding degree of net persuasive support strength that attains the benchmark; otherwise, there is doubt and p is not knowledge.

Simply stated, a claim (belief) is not knowledge unless there is a strong enough ground or case; such a case must amount to a proof. See figure 5.3.

(A)



(B)

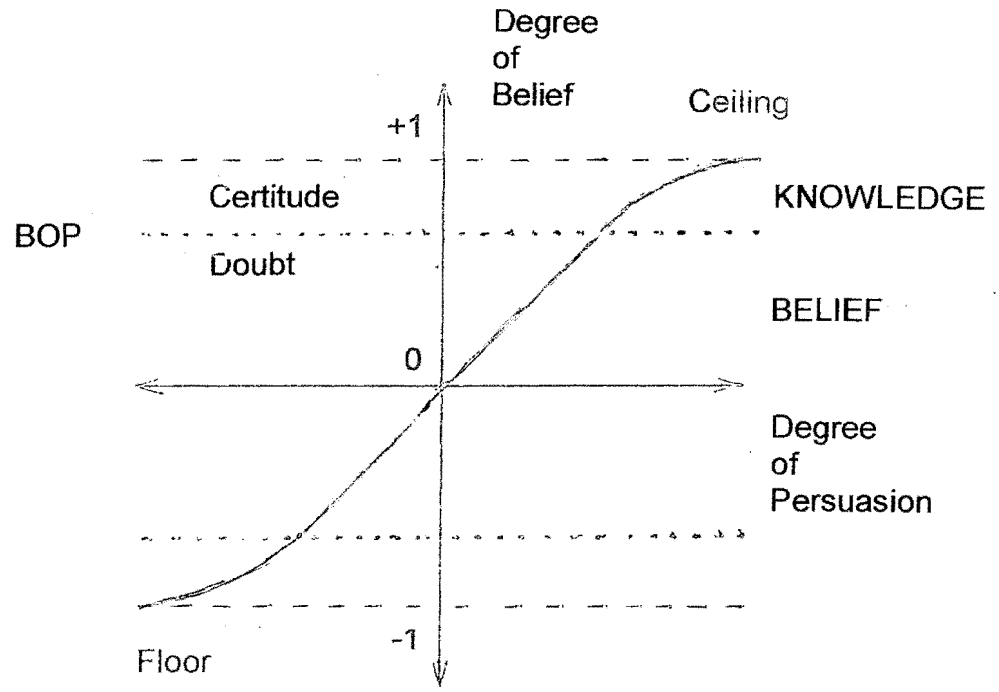


Figure 5.3 Claim-Persuasion Relation with Thresholds. The graphs of two distinct types of sigmoid function for the relationship of the net persuasive support strength of the ground or case and the net alethic uncertainty (or probability) of the claim that it supports.

This implies the following definitions of believing and knowing a proposition p with an alethic probability x expressed in the interval [0,1] or as a percentage. Thus, for a claim (belief):

(1) I +vely believe p. = I accept p as x-probably true.
(2) I neutrally believe p. = I neither accept nor reject p as 0-probably true/false = I suspend or withhold p as 0-probably true/false.
(3) I -vely believe p. = I disbelieve p. = I reject p as x-probably true. = I accept p as x-probably false.

For knowledge:

(4) I +vely know p. = I know p as x-probably true. = I believe p as x-probably true at/above a +ve benchmark.
(5) I -vely know p. = I know p as x-probably false. = I disbelieve p as x-probably at/above a -ve benchmark.

The use of "know" depends upon x meeting or exceeding a threshold on the scale for net alethic uncertainty. This threshold of certitude is the benchmark of proof (BOP) which is specified as part of the standard of proof (SOP). Traditionally, the expression "standard of proof" is informally used for the benchmark of proof. Clearly, it is certitude which directly impinges on an agent's decision as to what course of action to take. Given this, an agent has knowledge that p when belief p has certitude (i.e. a sufficient degree of net alethic uncertainty) on the basis of a ground or case which is a proof (with a sufficient degree of net persuasive support strength). Of course, if it is not knowledge then the claim might well be a strongly supported belief; and, given the circumstances, an agent or community might be contingently compelled to take action on this basis anyway. However, they are not informed by knowledge as such.

Generality of the CPR-T and other Theories of Knowledge. The generality of the CPR-T, which is at the heart of my version of the open CCTB model, is such

that it can in principle encompass all theory types. From the point of view of fallibilism, the golden mean – to wit moderation in all things – seems appropriate to the practical determination of knowledge in the business of life. In this respect, theory types like LT and GT are impractical extrema compared with TT types such as an open CCTB model, which is underwritten by a CPR-T. To make my point, I show that the aforesaid theories are indeed extrema.

It is important to recognise that the CPR-T is based on four related distinctions. They involve:

(1) The confidence an agent has for a claim (belief) having a particular truth value.
(2) The attitude of an agent to a claim having a particular truth value. Eg. accepting that it's true, withholding (suspension of belief) or rejecting that it's true.
(3) The degree of uncertainty attributed to a claim (belief) as to its alethic attitude.
(4) The basis-of-belief and its support strength for a claim (belief) having a particular truth value

Taken together, the claim is a belief (including disbelief); and we may suppose that associated processes of the above constitute the process of believing.

To state each theory in terms of the CPR-T, it is necessary to interpret and formalise them in terms of degrees of belief (based on uncertainty or probability) and degrees of support (based on support strength). Of course, proponents may not want to agree to this; and may accuse me of fudging results. However, if they are conceptually tolerant, it becomes apparent that each theory can be appreciated as a special-case in this conception. To begin, I shall re-interpret them:

(1) Limit theory (LT). A true belief is knowledge when it has full (net) certainty and support; that is, knowledge occurs only when there is full belief.

(2) Graduation theory (GT). A true belief is knowledge when it has some grade (or degree) of certainty or support ranging from zero to full certainty/support; that is, knowledge can occur when there is partial belief.

(3) Threshold theory (TT). A true belief is knowledge when it's uncertainty and/or support equals or is greater than some (positive) benchmark; that is, knowledge can occur when there is partial belief at or above some level of satisfiability, adequacy or sufficiency.

Each theory applies to a claim (or belief); and partial belief includes full belief and no belief. Now I shall formally elaborate each theory in terms of the CPR-T, which it was proposed and argued in section 2.3 belong to the class of sigmoid functions. Let p be a claim with a (net) degree of alethic uncertainty (or probability) c that depends on a basis-of-belief with a (net) degree of persuasive support strength s; and that full belief is possible. First, consider LT. Knowledge is defined at a threshold ô such that

$$c(p)=1 \text{ where } ô=1 \qquad \text{Eq.5.1}$$

which is to say the asymptote or ceiling of the function. This is the traditional Cartesian notion of knowledge. Of course, where the function has an asymptote, then knowledge is unreachable. Hence, we may suppose that the Cartesian view relies on a function with a ceiling where absolute certainty can be reached. Second, consider TT. Knowledge is defined at or above a threshold ô such that

$$c(p) \geq ô \text{ where } 0 \leq ô \leq 1 \qquad \text{Eq.5.2}$$

where the threshold ô on the alethic uncertainty scale can be placed anywhere. Usually, it is placed relatively high and not at an asymptote or not necessarily at a ceiling of the respective function. Third and last, consider GT. Knowledge is defined over a range

$$c(p) \in [0,1] \text{ and } ô=0 \qquad \text{Eq.5.3}$$

where there is zero inclusion or alternatively

$$c(p) \in (0,1] \quad \text{and } ô>0 \qquad \text{Eq.5.4}$$

where there is zero exclusion. Overall, LT and TT uphold an all-or-nothing thesis (absolutism) in defining knowledge whereas GT upholds a graduation thesis (gradualism); and each theory can be readily re-interpreted in terms of the (sigmoidal) CPR-T. Apart from TT, the other theories can be appreciated as extreme versions which allow the placement of the threshold for knowledge at zero (GT) or one (LT) on the scale for degrees of alethic uncertainty.

Given that LT, GT can be viewed as special-cases of TT, a decision has to be made as to where is the best location to place the benchmark of proof (BOP) on the CPR-T. Previously, I critically discussed the reasons for avoiding extrema as they have unacceptable consequences for finite fallible agents in the world. You can act too soon (according to a GT) or wait too long (according to a LT). It seems prudent to judiciously moderate one's judgements as to a belief being knowledge; therefore, it seems fitting to be to guided by a TT, like the open CCTB model, which is based on the principle of sufficient reason.

5.3.4 Debate and Proof-based Decision-making

Certification, by way of proof, leads an agent to attribute certitude (that is, at least being certain enough) to a claim. Clearly, the notion of proof through the contesting of positions is central to the open contested certified true belief (CCTB) model. Now I wish to elaborate on what it is to have a contest that can

lead to a proof of a claim and therefore knowledge. This may be interpreted as a response to the Gettier problem or the problem of the fourth condition. The approach to certification of a belief being knowledge described here is strategic rational criticism, which is in sympathy with Zaresky's [1989; 1996 ed. 2005] approach. Because of its strategic nature, I use a means-end conception to characterise it.

Aim. First up, what is the aim (end) of an alethic inquiry by critical discussion or debate in discourse? I think the charter of the Mosman Debating Society [p.1 1972] – in the northern suburbs of Sydney, Australia – offers a good aim for rational alethic inquiry by debate. Stated in poetic fashion, its aim is

> To bridge the gulf of ignorance
> and doubt,
> And let, by friendly argument,
> the truth come out.

I think this informally captures the purpose of the rational dialectics of (alethic) inquiry or forensics. Formally, however, it has to be re-stated in forensic terms; in particular, in terms of the open CCTB model. In an arena of debate that is governed by the tradition of forensics, the aim of an agent or camp that supports a position is to achieve a certitude of a belief by strategically developing a ground (or case) that amounts to a proof under the constraints of context and circumstance. Simply, the purpose is to attempt to prove that a claim is more likely true in relation to relevant alternative claims with respect to a given issue.

Plan. Next, what is the strategic plan of an alethic inquiry by debate? Essentially, it has a dialectical-rhetorical character. The features are:

(1) Issue
(2) Disagreement; that is, a difference of opinion.
(3) Contest; that is, opposition and persuasion by Reason.
(4) Proof-based decision-making

These conditions amount to rational debate in the discourse of mind or community. I shall critically discuss each feature in the context of debate.

First, the issue. An issue initiates debate if and only if it gives rise to a difference of opinion. As previously discussed in section 1.1.1, an issue is a particular kind of problem arising in mind or community. Typically, when a problem arises in the context of some discourse (on a topic), various opinions are expressed. These are possible solutions to the problem. In the case of alethic inquiry, such opinions are called claims. Where this difference of opinion persists, the problem is deemed to be an issue to be settled by debate.

Second, consider dis/agreement. It is important to recognise that knowledge can come from (rational) agreement. In rational discussion and debate it is possible that if a strong good case can be made for a claim and that case amounts to a proof, then there is general agreement or consensus – albeit a fallible one – as to the truth of things. Consequently, there is no presenting of different opinions. Where there is, then there is disagreement. This is the initiating condition for debate proper.

Third, consider contest. The essence of rational discussion and debate involves opposition and persuasion regimented by the dictates of Reason. Where Whately emphasises persuasion, Mill emphasises opposition in discourse. And, a notion of defeasible reasoning like that of Chisholm and Pollock emphasises the regimentation by Reason. In his early years, Mill was influenced by the forensic approach espoused by Bentham [1838] in *Rationale of Evidence*. This seems to account for the legalistic character of his language use. In my view, Mill's [1843; 1859] definitive account of opinion, truth and knowledge occurs not so much in *A System of Logic* but in *On Liberty*. He posits a defeasible theory of knowledge and epistemic progress. Truth – or knowledge – is decided through the contesting of opinion. That contest involves open public discussion and debate within a community (of inquirers). What makes one opinion more certainly the truth is its success in contesting with other opinions and defeating them. In *Areopagitica*, Milton [p.52 1644] aptly captures the nature of this

dialectical-rhetorical success. Of alethic inquiry by discussion and debate, he declares:

> And though all the windes of
> doctrin were let loose to play upon
> earth, so Truth be in the field,
> we do injuriously by licensing and
> prohibiting to misdoubt her strength.
> Let her and Falsehood grapple; who
> ever knew Truth put to the
> wors in a free and open encounter?
> Her confuting is the best and
> surest suppressing.

As a consequence of Milton's insight into the truth, apparently echoing that of Aristotle, those claims which are (closer to) the truth tend to be more robust and are inclined to succeed in a free-and-open rational debate with its opposite. In terms of the open CCTB model, the contesting of positions impacts on the net (rationally persuasive) support strength of their cases; and, therefore, on the corresponding alethic probabilities (that is, rational alethic un/certainties) of the respective claims. In such a contest of strength, the performance of each position can be recorded and tracked on a common claim-persuasion relation with thresholds (CPR-T). However, Mill recognises that any undefeated opinion may be challenged down the track. It may be defeated and replaced by another more relatively certain claim. Thus, Mill envisages an epistemic progress toward more certain and firmer claims. This seems to suggest a notion of robustness.

Fourth and last, consider proof and decision-making. Essentially, alethic inquiry by debate is a way of deciding amongst possibilities. But what does this entail? There are at least two ways of conceiving this:

(1) The elimination of a position/s.
(2) The domination of one position by another

I shall critically discuss each of them. I first turn to elimination. In *Elusive Knowledge*, Lewis [1996] develops a graduation theory of knowledge based on

un-eliminated relevant alternatives. A claim p becomes knowledge in relation to other possible views which he calls relevant alternatives. Knowledge emerges as :

(1) Some relevant alternative claims are ignored; or
(2) Some relevant alternative claims are eliminated

on the basis of the available evidence. This step leads to better – in the sense of a more epistemically stable – knowledge. As other alternatives arise, the current stable knowledge is again put to the test. It remains or is replaced by a better knowledge still. Either way, epistemic improvement has occurred. Now I turn to dominance. In Mill's account of the contesting of opinions, there are defeated and undefeated claims. It might seem that a debate is about the elimination of possibilities such that a (very) few or more preferably one possibility remains. However, I don't think this is right. While there are agents (or groups of them) their influence persists in one form or another. You can't kill off some claims – without killing off all agents and any documents associated with them. However, they can be made less influential than others. Through co-operative competition in a debate, one position may come to dominate another. Thus, debates are about a "struggle for survival", "the survival of the fittest" to use a Darwinian evolutionary expression. Hence, debates are best described in terms of the dominance and sub-ordinance of positions on an issue in mind or community. Hence, we may speak of strong/weak positions, superior/inferior positions and ultimately dominant and supreme positions. However, there is a concession to be made to the elimination of possibilities. It might be possible that a position is persistently subordinated that this condition is equivalent to an elimination. Such a condition is preferable to an intellectual roller coaster of ascending and descending positions on an issue. It is preferable that issues be settled once-and-for-all but, given the fallibility of agents, it is necessary that they be open to revision where there is the likelihood of mistake or error. Hence, the persistent domination of one possibility over others, which is open to revision, seems to be a prudent approach to debates. This view is not necessarily antithetical to that of Lewis. Some defeated positions are so

dominated by an undefeated position as time goes on that they are effectively eliminated from the game. Hence, for all intents-and-purposes, they are eliminated possibilities. There are likely to be good reasons for this; and this may be enough to guarantee their elimination for the foreseeable future, if not in perpetuity.

Regardless of the terminating condition – i.e. elimination, domination etc. – of positions in a rational debate, there remains the problem of when a dispute is resolved. How do we decide which position is the victor or winner in the debate? Here, I'm not concerned with the adjudicator, be it an authority or conscience, but the decision-making process itself. Clearly, to be consistent with the open CCTB model and the CPR-T which underwrites my version of it, the decision has to be based on some standard of proof (SOP). This is proof-based decision-making (PDM). In a debate, it might turn out that one case (rational ground) for a position satisfies the benchmark of proof (BOP). Proof is defined as follows:

Proof $=_{df}$ A case for a claim (or belief) p of a position in a debate with at least another position such that

(1) It has a net persuasive support strength (net cogency) that is sufficiently high such that it is the only one to meet or exceed the BOP as specified by the prevailing SOP; and thereby

(2) It confers a corresponding net alethic uncertainty (or probability) called certitude on the claim (or belief) p

in accordance with the prevailing CPR-T for the given context and domain of reference; otherwise, it is not a proof.

This is so irrespective of resource constraints that may be strict or otherwise. The benchmark of proof (BOP) is governed by a standard of proof (SOP). This

relates back to what I said about the principle of sufficient reason. There are two aspects to consider:

(1) Quality of reasons. The reasons satisfy what constitute good forms of reasons, arguments and evidence.
(2) Quantity of reasons. The composition of support strengths of reasons according to some calculus of the agent or community.

Looking back, the generality of the definition permits different versions that depend on the details specified in some code of conduct and/or the cognitive style of the agent or community. This is in keeping with the generality of the open CCTB model itself. A version based on the principles of fallible objective critical rationality is consistent with the tradition of forensics. This comes down to a contest conducted by rational agents though defeasible reasoning in discussion and debate; and which is certified by a proof consisting of good strong reasons, arguments and evidence.

Finally, taking all this into account, It is now possible to give a full definition of knowledge according to the open CCTB model and the CPR-T that underwrites it. Simply stated:

Knowledge that p $=_{df}$ A *claim (or belief*) p that is
(1) Contested in *debate*; and
(2) Certified by a *proof*
such that it has (alethic) certitude; otherwise, it is not knowledge.

This definition rests on four fundamental concepts: claim (or belief), debate, certitude and proof. It is a definition based on a notion of rational debate that involves opposition, persuasion and regimentation by Reason in mind or community.

JTB, Gettier Challenge and Proof. With regard to the Gettier challenge, do any of the above features constitute a fourth condition? In my view, some of the

features merely elaborate on support – the general equivalent of justification in the JTB model – while others may contribute to a fourth condition. If I had to select a feature/s of debate in discourse that might amount to a fourth condition, it would be contest and proof. To have a proof requires that the following conditions are met. They are:

(1) Relevant alternatives;
(2) Total evidence; and,
(3) A dominant position amongst (1) based on (2).

Now here's the dilemma. Does this constitute a declaration of a new condition or an elaboration of the old one? I shall consider each option. First, elaboration of the old condition. *Prima facie* it seems that proof is good justification or warrant of a very strong kind that arises in the contesting of positions by reason, argument and evidence. Second, declaration of a new condition. Proof, in the context of the open CCTB model, implies possibility and not just probability. Essentially, a debate involves the reduction or diminution of possibilities; that is, possible solutions (claims) to a problem (issue). This is done by contingently and strategically arguing a case for one position over another. Essentially, a proof is an indicator of the dominance (or pre-eminence) of one possible claim to truth over another by being the first and only position to satisfy the SOP. Overall, I'm inclined to favour the second option; that is, a new condition. This could be described as one based on proof-based defeasibility. The notion of defeasibility itself was introduced by Chisholm, Pollock and others to deal with the Gettier challenge. As Swain [pp.441 2000] puts it:

> .....An individual's justified true belief fails to count as knowledge because the justification is defective..... The defect involved can be characterised in terms of evidence that the subject does not possess which overrides, or defeats, the subject's *prima facie* justification for belief. Thus, ...knowledge is indefeasibly justified true belief.....

This seems to be a stronger version compared to the version that I have in mind. A weaker version is the open CCTB requirement. Knowledge that p by proof in a debate implies that the position which holds p has not been defeated

but actually defeated all the other positions in being the only position to achieve a proof in the circumstances. That victory may be final. Still, it is necessary to be open to the possibility, however remote, that there is additional evidence, as specified in some standard, that may overturn this determination. Essentially, this is the tradition of forensics.

Defeasibility, Proof and Re-open Provisions. Defeasibility in debate arises from the fallibility of finite agency. The open CCTB model, underwritten by the CPR-T conjecture, is based on objective fallible critical rationality. The commitment to epistemic fallibilism recognises the possibility that an agent or community can be mistaken, even in proof-based decision-making (PDM) in debate. Inspired by Peirce, Dewey [p.16 1938] offered a caution. He declared: “there is no [claim or] belief so settled as not to be exposed to further inquiry”. Where science is concerned, even Popper [pp.xxii-xxiii v.1 1985] maintains “that it is never possible to prove conclusively that an empirical scientific theory is false”. Of course, some deliberations can be more robust than others. Given the possibility of erroneous PDM, how is such a contingency to be dealt with? Again, we may be guided by a jurisprudential metaphor. Forensics – the rational dialectics of alethic inquiry – relies on a re-open provision. Sometimes a closed debate on an issue has to be re-opened. What triggers such a situation? According to the CPR-T and the associated SOP, once a position is the first-and-only one to meet or exceed the BOP, the debate is over. There is a dominant position. Generally, no further arguments or evidence makes a difference. To re-open the debate, certain rational requirements have to be met. They are specified in the code of conduct for debate and constitute a standard for a re-open provision. When the re-open provision is met according to some adjudicatory function – enacted by conscience or authority – then the debate is re-opened. Guided by a jurisprudential metaphor, what is required according to the provisions are good strong negative arguments against the dominant position. Here, the re-open provision of the open CCTB model concurs with Popper’s falsificationism. What counts is disconfirmation of the dominant prevailing view. Unlike falsificationism, the open CCTB model recognises both

support for (confirmation) and opposition against (disconfirmation) a position, except where the re-open provision is concerned.

CONCLUSION

> The beliefs which we have most warrant for have no safeguard to rest upon, but a standing invitation to the whole world to prove them unfounded. If the challenge is not accepted, or is accepted and the attempt fails, we are far enough from certainty still; but we have done the best that the existing state of human reason admits of; we have neglected nothing that could give the truth a chance of reaching us: if the lists are kept open, we may hope that if there be a better truth, it will be found when the human mind is capable of receiving it; and in the meantime we may rely on having attained such approach to truth as is possible in our own day. This is the amount of certainty attainable by a fallible being, and this the sole way of attaining it.
>
> John Stuart Mill
> *On Liberty*
> p.232 1859

The outcome of any philosophical inquiry has to be put in stark relief to its aim. In this way, a judgement of the degree of success of the project can then be made. The aim of my inquiry is to come up with at least adequate responses (solutions) to two inter-related philosophical issues (problems). As previously indicated, those issues are:

(1) The philosophy-rhetoric controversy (PRC). Are philosophy (more accurately, dialectics), and rhetoric antithetical to or incommensurable with each other?

(2) The persuasion-knowledge gap (PKG). What is the relationship between knowledge and persuasion?

I contend that a good resolution to issue (1) is not fundamentally achievable without a good resolution to issue (2). The PRC, as it is sometimes called, is

due to apparently different orientations. This is highlighted by the following accounts of the disciplines. They are:

(1) Dialectics (of philosophy): The pursuit of truth (knowledge) by the use of Reason in relation to possible disagreement in critical discussion or debate. Simply, it's the study of rational dispute (opposition) in discourse.

(2) Rhetoric: The pursuit of interests by the use of persuasion in relation to possible resistance in a social exchange i.e. conversation, discussion, debate, public speaking etc. Simply, it's the study of persuasion in discourse.

A typical contrast of these disciplines goes something like this: one discipline is concerned with "seeking the truth" amongst opposing opinions or claims while the other is concerned with "winning the contest" of opposing interests. Early rhetoricians probably saw it that way; and their pursuit of truth and other interests by rhetorical means obviously ruffled the feathers of early philosophers. A naive, superficial analysis suggests that they are distinct whereas a deeper analysis suggests otherwise. From the rhetorical perspective, the truth seems to be an interest pursuable by persuasion. From a dialectical perspective, an agent's interest is pursuable by reason in discussion and debate. Clearly, a more complicated story lies beneath the appearances of discourse. And, herein lies the PRC. Inspired by the early forensics of Grecian courts; Aristotle, Cicero and others believed that there *is* a deeper story to be told. Clearly, the pursuit of truth involves an interest in truth. Agents can pursue interests by influence and persuasion through language use without necessarily denying other contributing factors. Given these insights, it would appear that dialectics and rhetoric are not necessarily antithetical to one another.

What complicates the issue are the different historical accounts of dialectics. If we pursue the historical etymologies due to Barnhart [pp.275, 925 1988] and the OED [pp.599-600 IV; pp.857-858 XIII 1989], there are several accounts of dialectics. They are:

(1) The study of opposing forces in nature.
(2) Discussion and debate generally.
(3) The use of reasoning in critical discussion or debate.
(4) The pursuit of truth (knowledge) using Reason in critical discussion or debate.

Most of these possibilities can be ordered on a scale of abstraction. At the top is (1), which is concerned with opposition in the world generally. In the middle are (2) and (3), which associate reason with critical discussion or debate in discourse. And, at the bottom is (4), which is alethic inquiry by critical discussion or debate. As for rhetoric, it is not so problematic. There are different definitions of rhetoric but they more-or-less suggest the same thing. Basically, rhetoric is concerned with interpersonal influences by means of persuasion in discourse.

How then might they be related? Based on prior work, I developed a conceptual map of modern dialectics. Here, "dialectics" accords with definitions (2) above. This is shown in figure 2 of the introduction. Clearly, at the theory-level of consideration, it suggests that rhetoric is part of dialectics. On reflection, it soon became apparent that the subsumptive relationship of rhetoric to dialectics could only be convincingly argued via the concept-level of consideration that guided me in the first place. Thus, the PRC was semantically reducible to the PKG. What follows is a summation of results which highlights the bridging of the PKG and the settling of the PRC.

1. Summation

The summary of results is presented in three parts. At the conceptual-level of consideration the PKG is bridged; and at the theory-level of consideration the PRC is settled as a consequence. Table 1 summarises this reconciliation of philosophy (dialectics) and rhetoric. Finally, the results have implications for solving other problems associated with dialectics and AT.

DISCIPLINE #1	DISCIPLINE #2	RECONCILIATION
The dialectics of alethic rational inquiry involves...	The rhetoric of endeavour involves...	Subsumption: Rhetoric is a necessary sub-discipline of dialectics; including any genre (sub-type) of dialectics.
the pursuit of truth (knowledge)...	the pursuit of interests...	Interests: Truth is an interest of agents, esp. prudent, rational ones.
by the use of reason(ing)...	by the use of persuasion...	Influence & persuasion: Reason is both a source and influence. Reasoning/arguing involves rational persuasion using appeals to Reason e.g. arguments, evidence, case.
in relation to possible opposition, specifically disagreement...	in relation to possible opposition, specifically resistance...	Opposition & contest: Disagreement suggests resistance under influence and vice versa.
in critical discussion or debate in some greater discourse.	in social exchanges e.g. conversation, public speaking etc. in some greater discourse.	Discourse: Critical discussion or debate is a kind of social exchange in discourse.

Table 1: Synoptic Tableau for the Reconciliation of Disciplines. The philosophy-rhetoric controversy rests on an understanding of dialectics and rhetoric. Here, they are stated in such a way as to highlight similarities and differences. A synopsis of reconciliation is given in relation to these accounts.

1.1 Concept-Level Considerations

The ideas and principles of at least dialectics, rhetoric and associated disciplines are briefly discussed at the concept-level of consideration with the view to conceptually bridging the PKG. Both sources of information e.g. observation and influences over attitudes e.g. acceptance, withholding, rejection are crucial to determining what informational possibilities inform the thoughts, feelings and actions of an agent or group. Attitudes involve a bias or preference over things and (informational) possibilities of the mind. Those possibilities may be propositions, theories, rules, values etc.

To understand influence over attitudes in mind or community, a basic theory of mind (TOM) is required. A hedonic-hormic (HH) infrastructure of mind is the driving-force of influence in and between minds. Simply stated, agents have an agenda of interests (hormic aspect); and their thoughts, feelings and actions are driven by interest-satisfaction (hedonic aspect). Interests involve an innate basis and learned interests that have differentiated from them in the light of experience. Taken as a whole, the interests of agents are called the passions. Intellect is at the service of other faculties, especially the passions.

However, some agents have the capacity to be rational; that is, to be governed by Reason. Reason is a faculty of mind that can be a source of ideas and an influence. Essentially, Reason is reflexive impassioned rationally-principled semi-autonomous intellect. The interests of Reason are also rooted in the passions, specifically a pro-rational mode of the passions. The guiding principles at least include self-discipline, fallibility and open-mindedness, objectivity and logicality etc.

With the emergence of language use, it became possible to influence the self and others through persuasion. Persuasion works on the HH infrastructure of the minds of agents in a community. Hence, it can influence the attitude an agent takes to a range of informational possibilities, especially opinions and claims. The mechanism of persuasion is governed by an opinion-persuasion

relation with thresholds (OPR-T), though it may be abstracted to describe the relation between felt uncertainty and influence through interest-satisfaction generally. It was proposed that the class of sigmoid functions with thresholds best characterises the OPR-T and its sub-type for claims, the CPR-T.

Agents express opinions in the discourses of mind and community. An opinion is a proposition (or theory) held by an agent with a particular attitude toward it and a felt uncertainty (or probability) regarding that attitude. Usually, an opinion is a response (solution) to an issue (problem) that arises in discourse. One sub-class of opinions are claims; they are preferred propositions (or theories) about the truth of things in some domain or world, which may be expressed in the discourses of alethic inquiries. Claims can be public (extrinsic) or private (intrinsic), which are also called beliefs. The mechanism of persuasion for claims is governed by an CPR-T.

Persuasion is crucial in dealing with debates. A debate in discourse arises when there is disagreement in (mind or) the community; that is, there is difference of opinion. This includes debates over which one of a number of claims is the truth. Through a defeasible contest of persuasive strengths, a dominant opinion may be determined. During the contest, each agent or group attempts to strategically develop a ground or case, which supports and defends its position on the issue. A ground consists of appeals or patterns of appeals used in conversation; whereas a case consists of arguments and evidence. The ground/case is characterised by a weight (net persuasive support strength) and correspondingly the claim has an alethic attitudinal uncertainty or alethic probability. The support strengths for cases are based on cogency, which in turn is based on reliability measures. A dominant position arises when there is a preponderance of weights and corresponding alethic probabilities; that is, one of the claims meets or exceeds the benchmark of proof (BOP), which is a threshold on the CPR-T. This benchmark is specified by some standard of proof (SOP) along with the procedures for proof-based decision-making (PDM) in the discourse of alethic inquiry. PDM is a sub-type of establishment-based decision-making for opinions. Thus, a claim (or belief) with a proof is knowledge.

Overall, the progressive (rational) regimentation of influences necessitates a preference for persuasive over non-persuasive influences, in particular rational persuasion in a common language. Underlying this regimentation, which is responsible for the code of conduct of debate, is a common ground of pragmatic reliabilism. Rational persuasion involves the use of arguments and evidence, patterns of argumentation in conversation and building a case. Fundamentally, it rests on appeals to the interests of Reason. Part of its interests involves standards of rational debate, which includes the following requirements: self-discipline, objectivity, logicality, sufficiency of reason, empirical evidence etc.

1.2 Theory-level Considerations

Having bridged the PKG at the concept-level, we are in a position to address the old PRC at the theory-level of consideration. Essentially, this is the question: what is the relationship between philosophy – or, more precisely, the dialectics of alethic inquiry -- and rhetoric? In recent times, there has been a revival of the Aristotelean insight that attempts to answer this question. In their survey of today's AT, van Eemeren and Grootendorst [p.56 1995] describe this revival as follows:

> ....over the past few years, a powerful re-evaluation of classical rhetoric has been in progress.... It has become accepted that the a-rational -- sometimes anti-rational -- image of rhetoric must be revised. As a consequence, the sharp opposition of dialectics should also be moderated. According to a number of authors, rhetoric as the study of effective techniques of persuasion is not incompatible with the critical ideal of reasonableness upheld in dialectics. Other authors do recognize fundamental differences between a rhetorical and dialectical conception of reasonableness, but refuse to regard the first as inferior to the second. At the same time, there is a general acknowledgement that the non-rhetorically oriented theories of argumentation are saturated with insight from classical rhetoric.

Apparently, this revival is at least concerned with an integrated view of dialectics and rhetoric. But what is the relationship? A conceptual analysis of the previous table 1 suggests that it is necessary to recognise two related versions of each discipline. For dialectics they are:

(1) Dialectics (general): The pursuit of the right opinion to an issue through dispute (specifically, critical discussion or debate) in discourse.

(2) Dialectics of alethic inquiry: The pursuit of truth (knowledge) by the use of Reason in relation to possible disagreement through dispute (specifically, critical discussion or debate) in discourse.

Essentially, (2) is a genre of (1) and it happens to be the approach (or method) promoted by early philosophy. Today, in my view, a rational version of (1) seems right as to how philosophy goes about its business. Now to the two related versions of rhetoric. They are:

(3) Rhetoric (general): The pursuit of interests by the use of persuasion in relation to possible resistance in some social exchange e.g. conversation, public speaking etc.

(4) Rhetoric of alethic inquiry: The pursuit of truth (alethic interest) by the use of (rational) persuasion in discourse.

Essentially, (4) is a genre of (3), and, as for any interest, it was a way to the truth for the early rhetoricians. Taken together, it is interesting to note that the PRC is based on a contrast of (2) and (3) which are at different levels of abstraction. The inter-relationships of these disciplines that highlight this are shown in figure 1. The key relationship is subsumption. Chiefly, in “logic and philosophy” subsumption is defined [OED p.75 XVII 1989] as: “the bringing of a concept, cognition etc. under a general term or a larger or higher concept etc.; the instancing of a case under a rule, or the like”. As figure 1 shows, there are two kinds of subsumption. One is a type subsumption (the “genre_of” relationships) and the other is a part-whole subsumption (the “includes” relationship). As figure 1 shows, there are two kinds of subsumption. One is a type subsumption (the “genre_of” relationships) and the other is a part-whole subsumption (the “includes” relationship).

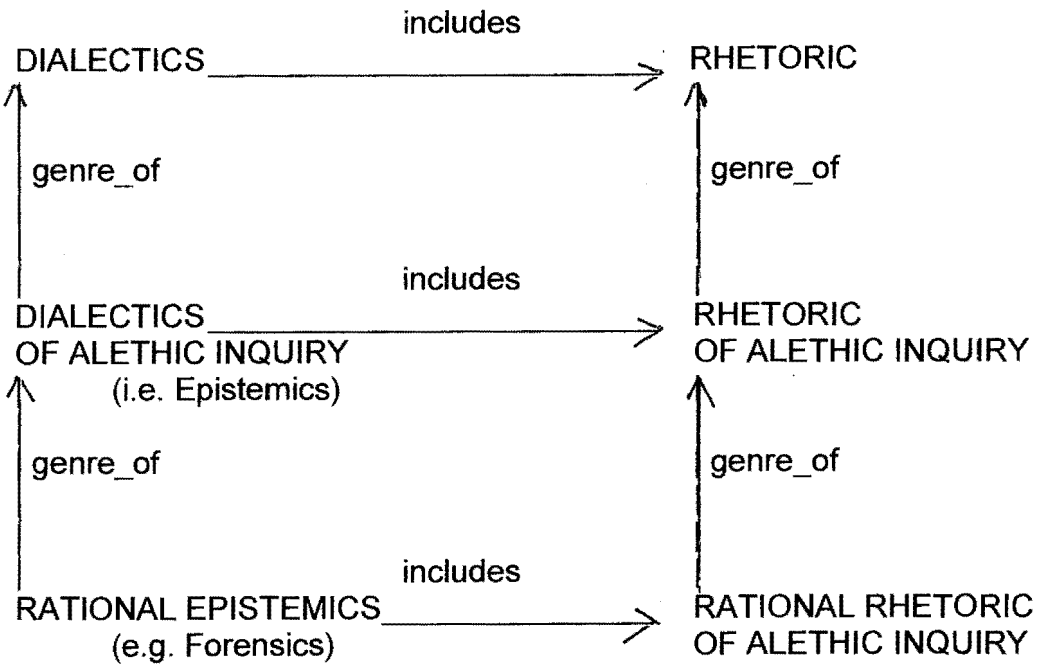


Figure 1: Genres of Dialectics and Rhetoric. Each genre of rhetoric is part of a corresponding dialectics at each level of abstraction. Dialectics, as defined by early philosophy, is really the dialectics of alethic inquiry and, like other genres, has rhetoric as a proper sub-theory.

I shall now describe the relational details shown in figure 1. At the top is dialectics and rhetoric. Besides being general accounts, they recognize the diversity of cognitive styles. The “includes” relationship means that you can’t have dialectics without rhetoric as it is truly a part of the essence of dialectics proper. Depending on the interest, topic etc., there can be a variety of genres. One genre has to do with alethic inquiry; that is, an inquiry into the truth of things. Such a dialectics is called, naturally enough, the dialectics of alethic inquiry or epistemics. At the same level of abstraction, there is a corresponding rhetoric called the rhetoric of alethic inquiry. On this point, the PRC probably arose when rhetoricians suggested to philosophers (dialecticians) that truth can be arrived at through persuasion as with any interest. Similarly, to continue, rhetoric is included in the corresponding dialectics.

Such a dialectics has to take into account the concerns of epistemology. At the bottom level of abstraction is the genre of rational epistemics and the corresponding rational rhetoric of alethic inquiry. What does this suggest? It suggests that the Aristotelian insight is right! For Aristotle, Cicero and a few others the requirement of Reason – and therefore arguments etc. – doesn’t negate the requirement of persuasion because the use of reasons, arguments, evidence etc. merely constitute the rational form of persuasion in mind or community. Rational persuasion is expressed through argument forms and the strategic development of a rational ground or case in discourse. Furthermore, a rational epistemics is often modelled on the tradition of forensics. This is a rational approach to alethic inquiry which has its origins in the workings of past and current courts of law. Indeed, if rightly abstracted, it can accommodate the workings of science, mathematics and other associated disciples.

Finally, where does philosophy fit in? Strictly speaking, the PRC is about the interrelationship of philosophy and rhetoric; though, obviously this can only be understood in a greater context involving other disciplines. An answer to this question has to take into account possible divergences of early and modern philosophy. Frankly, I think they are more-or-less the same; that is, the pursuit of wisdom generally using a dialectical approach. However, early philosophy

appears to have placed an emphasis on the good (values) and the true (knowledge).

Both philosophy (as representing dialectics) and rhetoric can be concerned with good standards, norms etc. as they apply to opinion and claims (beliefs), let alone principles, values, rules, methods, actions etc.; however, this is more evident in modern philosophy than in early philosophy, in my view. All of this is contentious as we are not entirely clear on the nature and interrelationships of the fundamental concepts mentioned above. Either way, dialectics is operationally at the heart of philosophy as it is with other disciplines. Regardless of this, philosophy (as regulated by dialectics) and rhetoric are not diametrically opposed to each other as suggested by Plato. Philosophy is just a discipline and -- like other disciplines eg. mathematics, science etc. -- its discourse fundamentally operates according to organised opposition through persuasion and Reason; that is, its method has a dialectical character. This regimented contest of persuasive strengths can be subject to different discursive styles, including and especially fallible objective critical rationality.

2. Implications

The bridging of the PKG and the consequent settling of the PRC have implications for the solution of two other general problems of modern dialectics or AT. One is the problem of theory incommensurability. Traditionally, the small theories of dialectics, logic, fallacy theory and rhetoric appear incommensurable and yet experience of critical discussion or debate and public speaking suggest that they ought to cohere into one big theory. Those who think this is so, are then confronted with the problem of inter-theoretic integration or what Johnson calls the network problem of reason. Groarke [p.3 1996, ed. 1998] goes even further, offering a sketch of what such a theory ought to be like. He states:

> It goes without saying that the ideal theory....will encompass a general theory and its practical application. The attempt to grapple with concrete examples of argument which it promotes could also help to produce better formal models of ordinary argumentation. If the field can avoid the

> fragmentation that has tended to accompany a proliferation of approaches, the end result may be a satisfactory general account of....argumentation -- scientific, political, etc -- which can also explain the concrete cases of ordinary language argumentation....

In this excerpt, Groake alludes to two broad requirements for a good theory. One relates to the theory being unified and the other to its generality. The bridging of the PKG and the settling of the PRC suggest these requirements are achievable but also indicates further lines-of-inquiry.

My philosophical inquiry goes a long way, in my view, to achieving the aforesaid requirements. The main implication of the results is that the alleged incommensurable approaches are actually commensurable aspects of, or perspectives on, debates. This was suggested by prior work which is illustrated by figure 2 of the introduction to this thesis. Dialectics is a genre of semiotics. It is a big theory consisting of several interrelated small theories. They focus on different aspects of critical discussions or debates in discourse and therefore can be thought of as representing *different* coherent perspectives on the *same* thing. What the settling of the PRC suggests is that this is most likely right. Clearly, rhetoric is a small theory in the big theory of dialectics along with other theories. Together, they form an integrated whole of commensurable theories.

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THE PERSUASION-KNOWLEDGE GAP

A philosophical inquiry into the philosophy-rhetoric controversy that aims at a reconciliation of disciplines by means of a unified dialectical-rhetorical framework for debate and persuasion, which is then applied to belief and knowledge in discourse.

OFFICIAL SUPPLEMENT

APPENDICES:

1. **Abbreviations**
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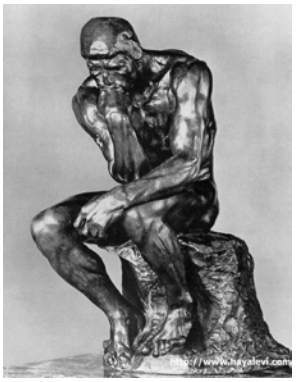

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The three official appendices below are supplementary materials for the introduction, conclusion and the chapters. They are relevant to a deeper appreciation of some concepts and principles.

1. Abbreviations

abbrev.	Abbreviation.
Abp.	Archbishop.
AD	*Anno Domini*. After death (of Christ).
AI	Artificial Intelligence
AP	Alethic probability
Aph.	Aphorism.
App.	Appendix.
approx.	Approximation.
Art.	Article.
AS	Argumentation scheme.
ASCII	American standard code for information interchange.
AT	Argumentation Theory.
Av.	Authorized version.
BC	Before (the birth of) Christ.
Bk.	Book.
Bp.	Bishop.
BOE	Benchmark of establishment.
BOP	Benchmark of proof.
B-type	Belief-type (claim).
CA	Cognitive architecture of the mind/brain.
c., ca.	Circa.
CCTB	Contested certified true belief.
Cf.	Compare or see.
Ch.	Chapter.
Cit.	Cite.
CP.	Collected papers.
Corres.	Correspondence.

CPR-T	Claim-persuasion relation with thresholds.
CSI	Crime scene investigation.
Dict.	Dictionary.
Diss.	Dissertation.
DOB	Degrees of belief.
DOK	Degrees of knowledge.
DT	Decision theory
EBM	Evidence-based medicine.
EDM	Establishment-based decision-making.
ed/s.	Editor/s; edition..
e.g.	*Exempl gratia*, for example.
esp.	Especially.
ESP	Extra-sensory perception.
et al	.....and other authors.
etc.	*Et cetera*, and so on.
EP	Einsteinian physics.
E/PDM	Establishment/proof-based decision-making.
Eq.	Equation or equation-like structure.
Esp.	Especially.
ETI	Extra-terrestrial intelligence.
FA	Forensic approach.
Fig.	Figure.
Fn.	Footnote.
GPR	General practical reasoning.
Greek	Greek.
GT	Game theory; graduation theory.
HH	Hormic-hedonic infrastructure of the mind.
ibid.	*Ibidem*, in the same book, passage etc.
id.	*Idem*, the same.
i.e.	*Idest*, that is
Illustr.	Illustration.
Intro.	Introduction.
IQ	Intelligence quotient.

IRJ	Infinite regress of justification.
IRR	Infinite regress of reply.
IT	Ideal theory.
ITI	The problem of inter-theoretic integration.
JTB	Justified true belief.
KK-thesis	Knowledge-knowledge thesis.
K-type	Knowledge-type (claim).
L., Lat.	Latin.
LC	Logical calculus.
Lect.	Lecture or lecture series.
Less.	Lesson.
Let., Lett.	Letter.
MS	Manuscript.
Notes	Notes.
NP	Newtonian physics.
NSW	New South Wales.
NT	Nuttal Dictionary of English Synonyms & Antonyms
Obs.	Obsolete.
OED	Oxford English Dictionary.
OED (Shorter)	Oxford English Dictionary, shorter version.
op.cit.	Previously cited.
Opp.	Opposite term, notion.
OPR-T	Opinion-persuasion relation with thresholds.
p., pp.	Page, pages.
PDM	Proof-based decision-making.
PDL	Peirce-Dewey ladder of epistemic progress.
Phr.	Phrase.
PKB	Persuasion-knowledge bridge.
PKG	Persuasion-knowledge gap.
pl.	Plural.
pp.	Pages.
PRC	Philosophy-rhetoric controversy.
Pref.	Preface.

Prob.	Probability.
Pt.	Part.
Publ.	Publications.
Q&A	Question and answer.
rev.	Revised.....
RT	Roget's Thesaurus.
sg.	Singular.
SDR	Standard of dispute resolution.
SEC	Source-evidence controversy.
sect.	Section.
SOE	Standard of establishment.
SOE/P	Standard of establishment/proof.
SOP	Standard of proof.
Suppl.	Supplement.
Syn.	Synonym.
TOM	Theory of mind.
TP	Tychic probability.
trans.	Translated by....
TT	Threshold theory.
UAS	Universal appellation/argumentation scheme.
UFO	Unidentified flying object.
UK	United Kingdom.
Univ.	University.
UNSW	University of New South Wales.
USA	United States of America.
vs.	Versus.
Wks.	Works.
WWII	World War two.

2. Glossary

This glossary covers technical expressions (i.e. terms and phrases) of this thesis. Acronyms are used as a shorthand for often repeated expressions. Expressions with an acronym are defined at the acronym entry. Defined expressions are in **bold** and expressions defined elsewhere in the glossary are underlined.

A

Acceptance A positive attitude toward a thing.

Action An internal and external e.g. behaviour purposeful processes e.g. thoughts, feelings, behaviour of an agent.

Agenda An agent's interests at any period in its lifetime.

Agent A purposive entity e.g. human being. It is based on a means-end conception of purpose.

Agent-opinion-appeal triangle The commuting diagram is based on the Aristotelian tradition. The diagram highlights that the ground of appeals strategically developed by an agent in contest with other positions has a persuasive impact on the relative attitudinal un/certainty of an opinion and the consequent confidence in which the agent holds that opinion. Dependency relationships implicit in this diagram are described by the confidence-certainty-strength triangle OPR-T.

Alethic inquiry An inquiry into the truth of things. Typically, this is in association with other competing claims about what is the truth in discourse.

Appeal Any linguistic expression (and perhaps non-linguistic expressions) or patterns of them in conversation that are used by an agent to psycho-socially influence or persuade other agents. E.g. rhetorical devices, arguments etc.

Appeal corpus The class of appeals currently available for strategic use by an agent in discourse.

Appeal profile A model of an agent's appeal corpus formulated by other agents or by the agent itself.

Appellation The use of appeals to persuade others or the self in discourse. A proper sub-type of appellation is argumentation.

Architecture The structure or the structural specification plan of a system. The structure includes the parts, the arrangement of parts into a system and the performance of the system subject to a range of environmental conditions.

Architecture, cognitive The architecture of the mind or the intellect. The term "cognitive" is often used in a wide sense, to cover perception, memory, cognition (narrow sense) etc. indeed, the term is often taken to suggest that all intelligent functions fundamentally have a cognitive character. If we take intelligence as the central notion, then the different functions are simply kinds of intelligence -- which would include cognition (in the narrow sense).

Argument A rational appeal use to persuade in discourse. The essential feature of such an appeal is its logicality. The structure consists of set of premises organised by logical rules and a conclusion logically drawn from the premises by inference.

Argument, deductive/inductive See deductive-inductive dichotomy.

Argument form The character of an argument based on at least 2 dialectical aspects: the logical form and rhetorical status of an argument used by an agent in discourse.

Argumentation A proper sub-type of appellation. A rational form of appellation that fully or mostly involves the use of arguments in the discourse of debate to persuade others or the self.

AS Argumentation scheme. A diagram of the partial or total pattern of argumentative activity in discourse. See also UAS.

ASCII American standard code for information interchange. This 8-bit code is used to represent information in computers and computer-based devices.

ASR-T Attitude-satisfaction relation (with thresholds). The attitude of an agent to a thing and the extent of the associated un/certainty (assurance) of its being right depends on the extent to which it satisfies an agent's interest/s.

AT Argumentation theory. The theory (and practice) of using arguments in conversation or discourse (narrow sense); or the theory of the use of arguments in organised opposition in discourse (wide sense). See dialectics.

Attitude An attitude expresses a preference i.e. bias, propensity, tendency etc. for one thing rather than another based on a value-based decision-making mechanisms. Generally, an attitude to a thing X can be: acceptance (liking) of X; indifference to X; or rejection (disliking) of X. Generally, an agent's attitude to a thing X (like-indifference-dislike) depends on interest satisfaction (pleasure-neutral-displeasure).

Attitude of an opinion An opinion involves a proposition and an attitude to that proposition. Where a proposition p is concerned, an agent's possible attitudes are: acceptance (liking) of proposition p with some confidence and associated un/certainty of p; withholding or suspension of judgement

(indifference) of proposition p with some confidence and associated un/certainty of p at zero; or rejection (disliking) proposition p with some confidence and associated un/certainty of p.

Attitude, doxastic An attitude that involves a preference for one possible claim or belief over another. These doxastic attitudes are: Belief, the acceptance of the truth of claim p with some degree of un/certainty or probability; Doubt, neither the acceptance or rejection of claim p; and disbelief, the rejection of the truth of claim p with some degree of un/certainty or probability. Over time, the attitude an agent takes to a claim depends on the extent to which it satisfies the agent's interests. Pragmatically, agents tend to be tacitly guided by what claims successfully inform their agenda and/or meet the rational requirements of Reason.

Attitude-satisfaction relation (with thresholds) See ASR-T.

Attitudinal un/certainty The un/certainty (or relative assurance) of judging rightly or correctly in forming an attitude to a thing e.g. opinion, claim etc.

Attribute A property or relation that characterises a thing. According to ontological structuralism, even properties are reducible to relation(ship)s.

Authority An agent or group whose role in a community is to regulate and adjudicate amongst agents of that community.

B

Background knowledge The opinions or claims that make up the context of discourse.

Battle-war metaphor According to this metaphor, disputation over an issue of controversy can involve a debate at a time and place ("battle") and debates occurring at many different times and places ("war").

Behaviour The external activity or movement of an agent in its environment.

Belief An intrinsically-held claim of an agent. There appears to be at least three features:

(1) Attitude. The proposition p is accepted, withheld or rejected as regarding its truth status;
(2) Truth. The proposition p is true, undetermined or false.
(3) Uncertainty and doubt. There is a relative attitudinal un/certainty regarding (1) above.

These are features crucial to belief even though they are not immediately apparent. For instance, in classical propositional logic the truth-value of p tacitly comes with full acceptance and certainty as is required for classical deductive reasoning.

Belief-persuasion relation (with thresholds) See BPR-T.

Benchmark A cut-off line on a scale for a graduated attribute as specified in a standard of conformance or compliance.

Benchmark of establishment See BOE.

Benchmark of proof See BOP.

Body of evidence The rational ground or case that supports an opinion or claim.

BOE Benchmark of establishment. A benchmark on the scale of attitudinal un/certainty of the graph of an OPR-T or CPR-T that marks the establishment of an opinion or claim.

BOP Benchmark of proof. A benchmark on the scale of alethic un/certainty of the graph fo a CPR-T which marks the proof of an opinion or claim.

B-type claim Belief-type claim. Contrasts with K-type claim.

C

CA The cognitive architecture of the mind or nervous system (typically the brain) of an agent.

Case The rational ground that supports an opinion of a position on an issue.

Certainty See un/certainty.

Certitude The condition of having been certified by some certification process. Associated with this is a degree of un/certainty attributed to an opinion or claim arising from its certification by an establishment or proof.

Certification The process of satisfying a standard before a thing can be used for some purpose of an agent, group or community. For example, it is preferable only to inform actions with claims that has been certified by satisfying some standard of proof.

Claim An alethic opinion; that is, an opinion about the truth of things in some domain, world or universe.

Claim-persuasion relation (with thresholds) See CPR-T.

Claim, private/public A claim is an opinion sub-type called an alethic opinion. The public claim of an agent is the claim it actually expresses or is potentially expressible in public. The private claim of an agent is the claim actually expressed or is potentially expressible in a closed circle of trusted agents or in

the privacy of the mind. See opinion, private/public for the prototype of this distinction.

Class A system (of elements or classes) based on typological relation(ship)s. A less restricted notion of set that allows for sets which can be a members of themselves and possibly other reflexive relation(ship)s like self-membership.

Code of conduct An agreed common class of rules and regulations of a community which is enforced by the conscience of the agent and/or some authority within the community.

Cogency The rational worth of an argument. This is derived from the net degree of certainty or probability of the premises and the pragmatic reliability of the logical form of the argument that enables the reasoner to infer a conclusion. The extent of cogency is the basis for rational persuasion; and therefore the (net) persuasive support strength of an agent's or group's case.

Cognitivism This is the philosophical view that the mechanisms of the mind are analogous to or essentially are the same as cognition. Where intelligence and cognition are viewed to have a computational nature, then so too does the mind.

Cognitive There are two senses. The wide sense (1) refers to mental abilities or cognitive capabilities; and the narrow sense (2) refers to a proper subclass of mental abilities that relate to cognition. By implication, sense (2) is included in sense (1). This distinction is due to cognitivism.

Cognitive architecture See CA.

Cognitive style A style of cognition or intellect in relation to other faculties of mind, especially the passions.

Combat metaphor According to this metaphor, the activity of debate is like a fight e.g. a clash of gladiators, except that it's a contest of strength by persuasion.

Common ground A system of agreed norms set in place by some authority and presumably used by an agents, group or community to guide action.

Community A group of agents that share a common ground of aims, strategies, values, code of conduct, background knowledge, resources, etc. A group of agents with common or shared interests whose actions are usually governed by community standards determined by some standards body.

Community of inquirers A community of agents involved in an inquiry into some domain of common interest.

Concept-level of consideration Cp. theory-level of consideration. Consideration of a theoretical framework at the analytic level of concepts and conceptual relationships. Alternatively, the focus can be a logical one where one considers propositions and logical relationships between them according to some logical system.

Conclusion A statement or proposition which is inferred from a class of premises in a reason or argument.

Conduct The movement of an agent's thoughts, feelings and action in discourse over time.

Confidence The degrees of felt assurance of an agent with respect to its attitude toward a proposition or theory.

Confidence-certainty-strength triangle Appeals and arguments are concerned with establishing or proving certain opinions or claim that inform the actions of an agent in the world. This commuting diagram represents a

dependency between the attributes of the agent, its opinion and the ground that supports that opinion in the discourse of debate. It is an abstraction of attributes from the agent-opinion-ground triangle; and the dependency is described by a graph of the OPR-T.

Conflict Any opposition of views, perspectives, opinion etc. in mind or community.

Contention The activity involved in some kind of contest of strength, especially one involving the persuasive strengths or rhetorical power of agents in a debate.

Context The body of opinion in which the flow of discourse on a topic occurs.

Conscience An internal authority that evaluates and prescribes the actions of an agent in a situation; and based on its value system.

Consensus A general agreement amongst agents or groups in a community of agents.

Content-act conception Syn. content-process conception, content-act holism. The view that acts i.e. process, rules etc. cannot be separated from the content they act upon. Hence, contents and acts occur as systems much like algebras and calculi.

Contest (of strength) A contest between agents or positions based on their respective strengths or powers relating to e.g. capabilities, resources etc.

Controversy Relatively high level of contention in a debate over an issue.

CPR-T Claim-persuasion relation (with thresholds) The dependency between the degree of net alethic un/certainty of a claim and the degree of net

(persuasive) support strength of the ground or case that supports and defends this view.

Counterbalance See equipollence.

CPR-T Claim-persuasion relation with thresholds. This is a rational sub-type of the opinion-persuasion relation with thresholds. The CPR-T is based on four related distinctions. They involve:

(1) The confidence an agent has for a claim having a particular truth value.
(2) The attitude of an agent to a claim having a particular truth value. Eg. acceptance, withholding (suspension of belief) or rejection.
(3) The degree of un/certainty attributed to a claim or belief as to its particular truth value.
(4) The basis-of-belief and its support strength for a belief having a particular truth value

Taken together, the claim is a belief (including disbelief); and we may suppose that associated processes of the above constitute the process of believing.

D

Debate A contentious discussion over an issue (of controversy) that arises in the discourse of mind or community. It involves a contest of strength of positions based on their persuasive strengths where each vies for dominance.

Decision(-making) A criteria-based comparison of and then a rule-based selection from options. For example, see deliberation.

Deductive-inductive dichotomy A classical dichotomy of argument types. The sharp distinction between deductive (deduction) and inductive (or non-deductive) reasoning. A deductive argument is an argument where the

conclusion is within the content scope of the premises. From the classical position, deductive arguments are formulated in a two-valued logic based on tacit full certainty and classical truth values. An inductive argument is an argument where the conclusion allegedly goes beyond the content scope of the premises or it is based on a many-valued logic that assigns degrees of probability to propositions. There is doubt about the veracity of the notion of induction. See deductivism and inductivism for positions on this dichotomy.

Deductivism Ant. inductivism. A position regarding the problem of induction. So-called non-deductive arguments, usually inductive arguments, are conceptually reducible to deductive ones. For example, inductive arguments are treated as enthymemes or ones where the premises have alethic probabilities; and therefore regulated by (say) a many-valued propositional logic with entailment or its cognates.

Degrees of alethic certainty Degrees of attitudinal (un)certainty concerned with the truth of a claim. E.g. p is accepted or rejected as true; or judgement is suspended or withheld.

Degrees of belief Syn. the degree of alethic un/certainty of an opinion or claim.

Degrees of certainty Syn. the degree of attitudinal assurance associated with an opinion or claim; that is, the degree of assurance with regard to the attitude taken. The assurance assigned to an opinion or claim due to its support-basis corresponds to the confidence (felt assurance) of the agent.

Degrees of contention The degree of conflict activity or “heat” (hotness/coldness) of a dispute or a debate in discourse, especially those relating to debate. Expressions which highlight this are “heated discussion”, “volatile debate” etc. See controversy.

Degrees of knowledge Syn. grades of knowledge. The epistemic worth assigned to a claim or belief. For example, according to Hetherington's gradualism, epistemic worth is essentially based on a generalised notion of good support.

Degrees of net support Syn. the net degree of rational persuasive support strength of a ground or case.

Degrees of persuasion Syn. the degree of persuasive support strength of an appeal, argument or patterns of them in discourse, including aggregates of them like ground or case.

Degrees of support Syn. the degree of rational persuasive support strength of an appeal or argument.

Degrees of support strength Syn. degrees of persuasive support strength.

Degrees of persuasive support strength The persuasive strength of an appeal, argument used to support (+) or oppose (-) an opinion or claim.

Degrees of probability This depends on the notion of probability used by an agent or community. Generally, it is a measure of the degree of un/certainty associated with an attitude to the truth of a proposition or theory.

Degrees of truth One account of this is the degree of verisimilitude of a claim.

DT Decision theory. A theory that studies the nature of decision-making by agents or groups i.e. group decision-making while carrying out actions in a domain or world.

Degrees of un/certainty Syn. the degree of certainty or uncertainty of an opinion.

Degrees of vagueness The degree of imprecision of some estimate for an attribute.

Deliberation Dispute resolution, especially as regards debates, occurs through a deliberation of the grounds (or cases) of the competing positions. Deliberation is carried out by an adjudicatory function called conscience or authority. Deliberation is concerned with determining the dominance of a position in dispute or debate. A debate is resolved when it is determined that only one amongst a number of positions satisfies the standard of establishment (SOE) i.e. it equals or exceeds the benchmark of establishment (BOE). Deliberation is made by determining the position with the greatest weight (weak establishment) or the position with a weight that is the only one to equal or exceed a benchmark (strong establishment). For opinions this is called establishment-based decision-making (EDM); and for claims it is called establishment (or proof), it is called proof-based decision-making (PDM).

Device metaphor According to this metaphor, agents, their minds or bodies or parts thereof are like instruments or devices; and therefore may be assigned reliability measures.

Dialectical perspectivism The view that dialectics consists of several inter-related sub-disciplines that are different perspectives on debates in discourse.

Dialectics The theory (and practice) of organised opposition or (non-violent) dispute in discourse. There are different historical accounts of dialectics.

(1) The study of opposing forces in nature.
(2) Discussion-and-debate generally.
(3) The use of reasoning in discussion-and-debate.
(4) The pursuit of truth (knowledge) using reason in discussion-and-debate.

Most of these possibilities can be conveniently ordered on a scale of abstraction. At the top is (1) which is concerned with opposition in the world generally. In the middle are (2) and (3), which associates reason with discussion and debate. And, at the bottom is (4). Generally, debates deal with deciding between differences of opinion through a contest of strength in conversation. Here, I'm using the wide sense of dialectic which means organized opposition in discourse. This accords with the Heraclitean notion of opposing forces in Nature; and, more specifically, the general appreciation of debate as a way of rational inquiry in early Philosophy. Other concerns associated with dialectics include:

(1) Rhetoric, the theory of persuasion;
(2) Dianoetics, the theory of reason;
(3) Strategics, the theory of strategy (and tactics);
(4) Logic, the theory of inference; and,
(5) Synectics, the theory of (opinion) development.

These may be viewed as sub-disciplines of dialectics, offering different perspectives on debates in discourse. Within some of the aforesaid theories, there may be sub-theories. For example, there is eristic, the theory of issues; or, problematics, the theory of problems. All these theories are conceptual elaborations of features that are prominent in dialectics proper. Thus, using the spectacle metaphor, we may view debates from a rhetorical, logical, dianoetical, strategic etc. perspective. Though they are different perspectives on the one system type, they are not conceptually disjoint; there are subtle relationships, even dependencies, between them, which synergistically bind the parts into a whole.

Dianoetics The theory (and practice) of being rational, of conducting oneself according to Reason in discourse. Reasoning involves conducting oneself according to Reason. It is narrowly associated with logical thinking or widely associated with operating principles of rationality, which includes logicality.

Dilemma A type of issue. A problem concerning a choice between two or more equally desirable choices.

Discourse The arbitrary movement in time of the conduct of agents and information flows within and between agents.

Discussion Conversation between agents regarding a topic of common interest; or an organised social exchange between agents relating to some topic of interest. See discussion, contentious/non-contentious.

Discussion, contentious/non-contentious Dispute types based on conversation and persuasion. A distinction between a discussion involving a difference of opinion on an issue in the context of a topic of interest; and a discussion on a topic of common interest. Simply, a distinction between a debate over an issue of controversy and a normal discussion on a topic.

Dispute Conflict in and between agents relating to an issue of concern. A system of contentious activity between agents or groups due to a disagreement on an issue of common interest. E.g. debate, fight, quarrel etc.

Dispute resolution A preferred stage of dispute, especially debate, in discourse that leads to the end of the dispute according to some common ground for dispute resolution. For example, see deliberation and preponderance.

Dispute, violent/non-violent A dispute is violent if there is intent to do harm as a means of coercion rather than persuasion; otherwise, it is a non-violent dispute, which relies on persuasion only.

Domain A demarcated sector of some real or imagined world or universe.

Dominance The supremacy of one position (as represented by an agent or group) over one or more other positions in a contest of strength.

E

EDM Evidence-based decision-making, which is a kind of “decision by debate”. Decision-making is based on arguments, patterns of arguments or case that make reference to evidence in the discourse of debate.

Empirical evidentialism See evidentialism, empirical.

Enthymeme An argument with one or more missing or suppressed premises. Often the suppressed premises are from the class of shared assumptions of a given community.

Epistemics The theory (and practice) of alethic inquiry in discourse. This discipline is based on the application of dialectics to alethic inquiry. It includes epistemology.

Epistemology The study of the nature (including structure) of knowledge.

Equipollence Ant. Preponderance. The condition where the weight of the grounds (or case) of positions in a debate are equal and opposite; and therefore balance out each other.

ESP Extra-sensory perception.

EP Einsteinian physics.

Establishment The dialectical state of a ground. A ground with an acceptable or adequate degree of net persuasive (support) strength. that is greater than any other ground in a debate or that is the only one to meet or exceed a benchmark.

Establishment-based decision-making See EDM.

Evidence There are two senses are:

(1) Evidence $=_{df}$ reason/s.
(2) Evidence $=_{df}$ fact/s from or things detected by a reliable source.

The rhetorical structure that relate them has this form: claim p is accepted (or believed) *because of* reason r which is *based on* evidence e. Given this, what things count as evidence? Again, there appears to be two related general senses as to what evidence is. They are:

(1) Objects. Things of the world including information items.
(2) Facts. Information which makes reference to the objects of (1) above.

We may even refer to them as material and conceptual (even logical) evidence respectively. It is with facts that we reason and in doing so, make reference to the objects of evidence. Examples of such evidence include: testimony of witnesses, documents, objects, fingerprints, DNA samples etc. Indeed, we may characterise the reasons (or arguments) which make use of them as evidentiary in nature i.e. evidence-based arguments. This may on occasion cohere with the view that conceives arguments as consisting of premises – the evidence – and the conclusion logically drawn from them. This highlights the need to be upfront about the use of "evidence" in discussion and debate.

Evidence-based decision-making See EDM.

Evidence, empirical Evidence that is base on experiences of the world. The facts and associated things in the world. E.g. observations, experimental data etc.

Evidence, weight of See weight of evidence.

Evidentialism Opp. reliabilism. The basis-of-belief is determined by the (available) evidence i.e. reasons, arguments etc. an agent has in support of it. However, there are different senses to the term “evidence”.

Evidentialism, empirical The basis-of-belief are arguments, patterns of arguments and case that make reference to the accessible evidence of things in the world.

F

Fallacy There appears to be two senses to “fallacy”. In the wide sense, a fallacy is a thought/thinking judged bad or poor according to some standard of the worth of cognition. In the narrow sense, a fallacy is an argument or reasoning is a fallacy if it has an argument form which is not admissible according to the standard of a community of practitioners in a given discipline. Essentially, the standard is based on the cogency of an argument or case.

Fallibility An aspect of the reliability of thoughts and action based on the proneness to error or mistake.

Fallibilism The view that infallible full certainty is not required to classify an opinion satisfying to some ideal standard of worth. For instance, for claims or beliefs, it is not necessary to have infallible full certainty regarding their truth to classify them as knowledge. A consequence of this view, is that a tolerance for error and the need for revision where error is detected is necessary.

Falsificationism This is a view on how science works; or the general method of science. Scientists creatively form conjectures i.e. hypotheses or theories that are then subject to vigorous and rigorous attempts to refute them. Refutation involves strong opposing arguments based on empirical evidence. A generalisation of falsificationism is Popperianism.

Forensics A/The rational dialectics of alethic inquiry.

Force A mechanical concept appropriated from physics to characterise the degree of persuasion; that is, the degree of persuasiveness or persuasive influence of arguments or evidence.

Force of an/the argument The persuasiveness of an argument due to its persuasive support strength.

G

Game metaphor According to this metaphor, the social activity of agents can be likened to and therefore understood in terms of a game. Thus, the features used to describe games generally can be applied to any social activity. What is fundamental to games and therefore social activity is decision-making.

Generalised support A generalisation of the notion of support to cover different conceptions of knowledge. See the source-evidence controversy.

Goal Syn. aim, objective. A schema of an agent that represents some desired state aspect of the world.

Gradualism A view that treats a nominated attribute as consisting of degrees, grades or levels on a scale of values. Whether or not this appropriate for a given for a given attribute may be open to debate. Contrasts with absolutism.

Graduation theory See GT.

GT Graduation theory. A theory of knowledge based on graduated attributes. Hence, there are degrees (or grades, levels) of knowledge. Compare with LT and TT.

Ground The system of appeals that is strategically developed in the context of debate in discourse; and that supports and defends a position on an issue.

H

heat-temperature metaphor According to this metaphor, the contentious activity and the measure of contention in a dispute e.g. debate is like the heat of substances (molecular interactivity) as measured by temperature.

HH infrastructure The hormic-hedonic infrastructure in the cognitive architecture of the mind. An agent can attempt to influence another agent's attitude to a thing by getting them to realize that it offers interest satisfaction. It is the fundamental driving-force or "engine" of thoughts, feelings and actions. There are both hormic (purposive) and the hedonic (pleasure-pain evaluative) aspects to this infrastructure. As a collection or system of interests, it is called the passions. This system consists of two aspects. They are:

(1) Hormic aspect of the passions. This is based on a means-end conception. An interest of an agent includes a goal and plan/s for achieving it. Agents tend to have an agenda of interests.
(2) Hedonic aspect of the passions. This is based on an attitude-satisfaction-habit conception. Agents value and eventually prefer things to an extent, which is based on interest satisfaction; concurrently, those extents lead to habit formation and regular activities.

What is the origin of the interests? The traditional accounts are:

(1) Innate ideas. Interests are hard-wired means-end structures that have evolved in a given species.
(2) Learned responses. Interests are soft-wired means-end structures that arise through upbringing, experience (imitation, recorded sources) or creative thought.

Those interests that are innate e.g. desires, urges, drives, needs, emotions etc. are conveniently referred to as instincts. Others are learned interests; however,

even they are contingently differentiated from and therefore grounded in the instincts via the effects of experience. It is through these interests that influence can be brought about.

hormic-hedonic infrastructure See HH infrastructure.

I

Ideology A body of ideas, principles, values etc. which are politically important (see politics) to an agent or regime in a community.

Inductivism Cp. deductivism. A position regarding the problem of induction. Non-deductive arguments, usually inductive arguments, are a distinct class of arguments that are not conceptually reducible to deductive arguments of some kind.

Inference A logical movement of thought based on the rules of some logical system.

Inference, deductive/inductive There are different inference types for deductive reasoning. Also, there appears to be different types of inductive reasoning. Whether or not this constitutes two abstract types of inference is a contentious issue. See deductive/inductive dichotomy.

Influence A cause-and-effect relation between systems (including agents) due to a manifest or latent interaction. The systems may be in contact with or at a distance from each other.

Information Information come in many forms like symbols, signs, concepts, rules, proposition, theories, images, diagrams etc. Though a readily used term, there is controversy as to what information really is. The 20th century has culminated in at least three familiar views regarding the nature of information. They are:

(1) Information is a physical thing that involves signals and signal processing associated with computation, communication and most likely cognition and other associated mental phenomena.
(2) Information has features at least as described by communication theorists like Shannon and Weaver [1948]. Information has the feature of information "content" or entropy.
(3) Information has the feature of intentionality (or aboutness) in the sense of information semanticists like Brentano [1874], Bar-Hillel [1964] and others.

The conceptual difficulty is that each of these accounts is reasonable and plausible. Apparently, there is a deeper story to be told. Given that opinions and claims (i.e. belief and knowledge) naturally appear to be informational kinds, they too are tied up with these concerns.

Inquiry An investigation or research into an area of interest. Inquiry involves probing for or getting at the best of things according to some standard of worth.

Intellect The faculty of cognition in the mind of an agent. It has the attribute of cognitive intelligence. Fundamentally, the intellect is about cognition and self-organisation (memory and learning). Self-reflection, which includes cognitive reflexion is most likely a mode of the intellect.

Intelligence The informational functionality (or capability) of an agent in relation to some domain, world or even its own mind. The best attempt to measure of this is called IQ.

Interest A motive for thought, feeling and action. According to a means-end conception of purpose, a goal with a plan i.e. associated strategies or strategy-base.

Interest, innate/learned A distinction between interests which are genetically-determined (i.e. innate, hard-wired) to some extent and those which are learned

(i.e. soft-wired) through interacting with the environment. The abstractness or "sketchiness" of some innate interests allow other interests to inherit their motivating driving-force through elaboration.

interest satisfaction The accidental or intentional occurrence of conditions or circumstances that satisfy (i.e. meet the requirements of) some interest of an agent, group or community.

IQ Intelligence quotient. The standard measure of the intelligence of an agent.

Internalist-externalist debate Does belief and knowledge depend on some internal aspect of the mind or some external aspect like the senses or instruments? A generalisation of this issue is the source-evidence controversy.

Issue (of controversy) A shared problem usually expressed as a question that arises in the context of discourse and leads to debate.

J

JTB model Justified true belief model. This is the current orthodox view that knowledge is justified-true-belief. Thus, a claim p is knowledge if p is true, p is believed to be true and that belief p is justified.

Jurisprudential metaphor Syn. legal analogy. See jurisprudential model.

Jurisprudential model A philosophical framework that views the abstract intellectual workings of (Western) courts of law as a framework for understanding debates generally. Thus, the abstract intellectual system at the core of jurisprudence is a model for conducting, managing and resolving debates.

justification Cp. with support. The presenting of strong argument, evidence or case in support of some opinion or claim.

K

KK-thesis Knowledge-knowledge thesis. The view that a belief p as knowledge depends on the agent knowing that it knows p.

K-type claim Knowledge-type claim.

Knowledge A claim (alethic opinion) or belief that satisfies a particular epistemic requirement or standard. At the very least, it has to be a true belief according to some theories of knowledge. The orthodox view is based on the JTB model.

Knowledge development The stages that a claim or belief go through in becoming knowledge rather than belief.

L

Legal analogy See jurisprudential metaphor.

Limit theory See LT.

Logic The theory (and practice) of inference in discourse.

Logical form An aspect of argument form. The logical structure of a reason or argument. It has to conform with the rules of some accepted logical system.

Logicality A principle of rationality according to which rational agents are only persuaded by cogent arguments. See cogency.

Logical rules Syn. rules of inference.

Logical system A system of logic; that is, a system of logical rules.

LT Limit theory. Compare with GT and TT.

M

Mind A functional view of some system of intelligence e.g. nervous system, brain etc.

Means-end conception A view of the purpose of an agent, group or community based on goals (ends) and plans (means) to achieve or realise that goal.

N

Net degree of alethic un/certainty An aggregate of alethic un/certainties. The accumulated alethic un/certainties of an opinion or claim arrived at though a net (support) strength of its ground and the graph of the associated OPR-T.

Net persuasive (support) strength An aggregate of persuasive support strengths. The accumulated persuasive (support) strength of a ground or case that supports an opinion or claim. It is based on accumulating the persuasive support strengths of appeals or arguments used to strategically develop the ground in the discourse of a debate.

NP Newtonian physics.

O

Open CCTB model A threshold theory of knowledge. According to this epistemic model, knowledge is defined as follows:

Knowledge that p $=_{df}$ A belief p with a truth value t that is

(1) Contested in debate; and

(2) Certified by a proof

such that it now has (alethic) certitude; otherwise it is not knowledge.

This is for a rational debate involving organised opposition and persuasion regimented by Reason in mind or community. It rests on four fundamental conceptions: the CPR-T, belief, debate and proof. A belief p of an agent or community becomes knowledge when its degree of net alethic un/certainty (or alethic probability) in the BPR-T attains the benchmark of sufficient certainty (certitude) by way of being certified by a ground (or case) with a corresponding degree of net persuasive support strength that attains the benchmark of sufficient persuasive support strength; otherwise, there is doubt and p is not knowledge.

Opinion A proposition (or theory) with an associated attitude toward that proposition, which is a response to an issue of controversy.

Opinion, private/public An opinion that is actually expressed or is potentially expressible publically is a public opinion of an agent or group; otherwise it is manifestly or latently private. Manifest privacy is the privacy of a closed circle of agents whereas latent privacy is the privacy of one's own mind. This applies to all opinion sub-types such as claims.

Opinion-persuasion relations (with thresholds) See OPR-T.

Opinion-Persuasion thesis The confidence an agent has and the associated net (alethic) un/certainty of its opinion is dependent on the net persuasive (support) strength of the ground (or case) for that opinion which is strategically developed in discourse.

Opposition Ant. support. Against something. In debate, it is contentious conversation that involves a conflict of positions, a difference of opinion and a contest based on persuasion.

OPR-T Opinion-persuasion relation with thresholds. There is a (causal) dependency or correspondence between the persuasive (support) strength of an appeal or argument and the attitudinal un/certainty of an opinion considered by an agent or group. The persuasive strength has a range (0, ±∞) or [0, ±n] and the attitudinal un/certainty has a range [0, ±1] depending on the graph type.

Organised class (of things) A set with structure.

P, Q

Passion See The passions.

Peirce-Dewey ladder of epistemic progress See PDL.

pCPR-T parameterized claim-persuasion relation with thresholds. A proper sub-type of the pOPR-T.

PDM Proof-based decision-making, which is a kind of "decision by debate". A decision as to whether or not a claim or belief is knowledge based on there being a proof for that claim; in short, this is knowledge by proof.

PDL Peirce-Dewey ladder of epistemic progress. Both Pierce and Dewey used a series of corresponding attributes to characterise a "ladder" or scale of progressive knowledge development.

Persuasion Psycho-social influence of an agent on an agent by language use (narrow sense) or by the use of sign systems, which includes language use (wide sense). Persuasion involves the use of appeals in social exchanges e.g. conversation, public speaking etc.; and, it may be directed at not just others but also the self. The dynamics of persuasion is described by the opinion-persuasion relation with thresholds (OPR-T). Preferably, the threshold of establishment (TOE) is the preferred basis for using opinions to inform

thoughts, feelings and actions. Fundamentally, it is a threshold of interest satisfaction.

Persuasion-knowledge bridge See PKB.

Persuasion-knowledge gap See PKG.

Persuasive support strength The degree of support given to an opinion or claim by an appeal (or argument) or ground (or case) arising from (rational) persuasion. The influence of agents is characterised by a graph of the OPR-T that uses this attribute as a measure of persuasiveness.

Philosophy The pursuit and use of wisdom in life. Wisdom is a general abstract notion of worth as it relates to any and all aspects of life. It is based on a general appreciation that some things are rationally better or worse than others; that good things are rationally preferable to bad things; and that there can be progress (i.e. betterment, improvement etc). Traditionally, philosophers have always been interested in some notion of knowledge as the basis for judging the worth of claims or beliefs.

Philosophy-rhetoric controversy See PRC.

PKB Ant. persuasion-knowledge gap. Persuasion-knowledge bridge is an conceptual scheme or theoretical framework which adequately describes and explains the relationship/s between the pursuit of interests by persuasion (rhetoric) on the one hand and the pursuit of the truth or knowledge (rational epistemology) by discussion-and-debate on the other hand. Clearly, the pursuit of truth involves an interest in truth. Agents can pursue interests by psycho-social influence and persuasion through language use. Given these insights, it would appear that dialectics and rhetoric are not necessarily antithetical to one another.

PKG Ant. persuasion-knowledge bridge. Persuasion-knowledge gap is an absence of an adequate understanding of the relationship between the pursuit of interests by persuasion (rhetoric) in discourse on the one hand and the pursuit of the truth or knowledge (rational epistemology) by rational discussion-and-debate in discourse on the other hand.

Politics The theory and practice of pursuing, achieving and using the power of governance in some organisation or community.

Popperianism This is a generalisation of Popper's falsificationism, which describes how science works. Where there are conflicting views, what counts are opposing appeals, arguments or evidence; and how robust a position is in the face of opposition. Supporting appeals, arguments or evidence are irrelevant, ineffectual or pointless. In extreme versions, they are dismissed altogether.

pOPR-T A parameterized opinion-persuasion relation with thresholds. This defines a series of such relationships. Each associated with the value of the parameter.

Position (on an issue) A standpoint or stance on an issue. A position consists of an opinion and a ground which supports it in relation to other positions in discourse.

Possibility space See space of possibilities.

Power The extent to which a system or agent can influence other systems or itself in the service of some agenda.

Power, rhetorical See rhetorical power.

Pragmatic reliabilism See reliabilism, pragmatic.

Premise, implicit/explicit a premise in an argument is implicit if it is not stated but assumed; otherwise, it is an explicit premise. See assumption; premise, suppressed.

Premise, suppressed an unstated (either assumed or ignored) premise in an argument. See premise, implicit/explicit.

Preponderance Ant. equipollence. The condition where the weight of the ground or case of positions in a debate are not equal; and therefore do not balance out each other.

Principle/s of rationality The guiding principles of Reason. One system of principles is called critical rationalism. Generally, it is an attempt to understand the operating principles of at least science, mathematics and other disciplines that rely on them. It includes principles relating to: self-discipline, fallibility, open-mindedness, logicality, the principle of sufficiency of reason, objectivity etc. Taken together, they constitute objective fallible critical rationality. Of course, there are more principles if one wishes to fully characterise a rational “way of being” in the world.

PRC The philosophy-rhetoric controversy. This the longstanding controversy concerning the proper relationship between rhetoric and (early) philosophy. The PRC, as it is sometimes called, is due to apparently opposite orientations. According to a means-end conception, they involve:

(1) Dialectic (of Philosophy): The pursuit of truth (knowledge) by the use of Reason in overcoming disagreement in a discussion-and-debate.
(2) Rhetoric: The pursuit of interests by the use of persuasion in a social exchange i.e. conversation, public speaking etc.

Typically, one is concerned with "seeking the truth" amongst opposing opinions and the other with "winning the contest" of opposing interests.

Preference Given a set of options or possibilities, a preference over than involves an ordering where the agent values one option over another according to one or more criteria.

Preponderance Ant. Equipollence. The condition where the weight (or net persuasive support strength) of one position's ground/case in a debate is greater than other positions. Furthermore, there may be a requirement that it equal or exceed a benchmark of establishment or proof.

Principle of sufficient reason See PSR.

Probabilism An approach to un/certainty that attempts to understand beliefs in terms of probability one way or another. This probabilistic conception goes back to Aristotle. Later advocates include Locke, Mill, Keynes, Russell, Ramsey and others. Apart from degrees of belief, Ramsey refers to "partial belief". In some modern accounts, an agent's degrees of belief is viewed as subjective probabilities that is required to conform to the axioms of the probability calculus. The conformity to the axioms of a probability calculus may depend on the kind of probability one has in mind.

Probability conception The word "probability" is ambiguous. Both Keynes and Ramsey recognise two different notions of probability. They may be expressed as follows:

(1) Alethic probability (AP). The probability of truths is the degree of un/certainty an agent has that a claim is true (or false). Eg. the probability that a proposition p is true.

(2) Tychic probability (TP). The probability of chances is the degree of un/certainty (or likelihood) that an agent has that a condition prevails. E.g. the probability (or chance) of an event e occurring at a particular time.

Clearly, one has to do with propositions and the other with circumstances, perhaps suggesting the existence of chance or randomness in Nature.

Probative force The strength of evidence in an inquiry into the truth of things in some domain or world. It corresponds to the persuasive support strength of the argument that makes reference to the evidence though its premises and conclusion.

Proof A case that satisfies a standard of proof. In the open CCTB model, it might turn out that one ground (or case) for a position in a debate satisfies the benchmark of proof (BOP). Proof is defined as follows:

> Proof $=_{df}$ A ground or case for a claim or belief p (i.e. total evidence) in a debate such that
>
> (1) It has a net support strength which satisfies the benchmark of proof (BOP); and thereby
> (2) It confers a corresponding alethic certitude on the belief that p
>
> in accordance with the CPR-T for the given context and domain of reference; otherwise, it is not a proof.

This doesn't mean the first position in a debate to satisfy the SOP but the only one to do so. The BOP is governed by a standard of proof (SOP).

Proof-based decision-making See PDM.

Proposition The meaning of a sentence or statement independent of the language in which the statement is expressed.

PSR The principle of sufficient reason. An agent only accepts an opinion or claim if there is sufficient reason to do so. The expression "sufficient reason" may be interpreted differently. Generally, it is a case with relatively high (rational

persuasive) support strength, which an agent strategically develops in the discourse of debate. Furthermore, there may be a requirement to satisfy a standard of establishment or proof.

Psycho-social influence Attitudes toward a proposition (or theory) p is determined by psycho-social influences or persuasion in discourse. Describing them as psycho-social covers psychological effects due to interacting with the world e.g. Nature, artifacts etc. and/or other agents and community. Simply stated, there are 3 modes of psycho-social influence. They are:

(1) Experience. Proposition or theories become valued, preferred and habituated (or otherwise) via interest satisfaction arising from action in the world, including those involving other agents.
(2) Appeals. Proposition or theories become valued, preferred and habituated (or otherwise) via interest satisfaction arising from appeals in discourse.
(3) Arguments. Proposition or theories become valued, preferred and habituated (or otherwise) via interest satisfaction arising from arguments in discourse.

Both (2) and (3) rest on the appeal corpus of an agent; (3) is a rational kind of (2); and (2) and (3) can involve linguistic and non-linguistic forms of expression.

Pyrrhonism This view is due to Pyrrho of Elea. Generally, the appeals or arguments of opposing positions on an issue sooner-or-later balance each other; that is, they reach a state of equipollence rather than preponderance. Consequently, debate doesn't help in deciding between positions or their opinions. See also Popperianism.

R

Rationality The rational mode of the mind. An agent, mind of community is rational if ti is primarily regulated by its Reason.

Rational persuasion Persuasion based on the use of arguments, patterns of arguments and case in the discourse of a debate; and in accordance with principles of rationality, especially with regard to the logicality of arguments.

Reason The faculty of rational thought, feeling and action. Reason may be viewed as impassioned rationally-principled reflexive semi-autonomous intellect. Based on the prior definition, Reason has the following capabilities:

(1) Semi-autonomy intellect and cognition
(2) Pro-rational passions
(3) Rationally-principled regimentation
(4) Reflexion
(5) Self-organisation

Essentially, Reason is intellect functionally integrated with a pro-rational mode of the passions which gives it a motivational basis.

reason A rational appeal used to persuade others or the self. It is a line-of-reasoning in thought or conversation. Traditionally, three categories of reason are recognised. They are:

(1) Evidencing. A reason "for believing p is an item of evidence showing or tending to show that p is true".
(2) Motivating. A reason "for doing something is a possible motive for that action".
(3) Causally necessitating. A reason for why an event or condition obtains are the causes which necessitate them.

It is naturalistically arguable that (1) and (2) are psycho-biological sub-types of (3).

Reasonable man An archetype of Reason. An agent which operates according to reason and/or the passions in an appropriate way.

Reason and passion A classical contrast between Reason and the passions of an agent, both of which can influence thoughts, feelings and actions. Reason is the intellect operating free of other internal influences whereas the passions are the emotions or emotionally-supported vested interests of the agent. Furthermore, there is a pro-rational mode of the passions that is the motivating and influencing aspect of Reason.

Reasoner An agent with a faculty of Reason that is put to use in the business of life.

Reason(ing) It is possible to distinguish two related senses of "reasoning". They are:

(1) Wide reason/ing. Reason and reasoning are the thoughts and thinking of Reason. A reason is simply a rational thought, or train of such thoughts, produced by rational thinking that includes (2) below.

(2) Narrow reason/ing. There is thought and thinking in Reason, given that it is a kind of intellect. But reason and reasoning are not strictly identified with them. It is reserved for a proper sub-type that has a logical character. The intellectual process of producing reasons for supporting or opposing an opinion or claim

Both senses *prima facie* seem to be reasonable and plausible views.

Reconciliation of probability conceptions A reconciliation is possible through an objective rational approach to obtaining supports strengths by way of the reliability of systems – be they perception, Reason etc. We therefore have incremental values for measuring and tracking the laying out of one's ground or the building of a case in a debate. Reliability measures are usually based on the probability of chance. Using a reliability-derived support strength based on the probability of chance, it is possible to determine an alethic probability (the probability of truth) by way of a opinion-persuasion graph with

thresholds. In this way, the alethic probability of a claim is related to the tychic probability associated with processes relating to source and influence.

Regime A power-based group within a community characterised by its shared agenda and ideology and its political interest in making this the common ground that regulates the members of a community or society.

Rhetorical power The power of an agent or group to persuade or convince others. Agents use various appeals and arguments as part of their arsenal of persuasion.

Rejection A negative attitude e.g. deny, dismiss a thing.

Relation See attribute and relationship. According to ontological structuralism, a relation is a basic relationship.

Relationship A generalisation of relation. That which relates relata to each other in some structure.

Relatum Pl. relata. That which is related by relationship to some (other) relatum in some structure; a part of a whole.

Reliability From an engineering point-of-view, reliability involves relative freedom from failure, long life and amenability to repair; however, it is the first factor which takes precedence. Failure is a gradual or sudden loss of the ability to operate correctly according to set criteria. In this day-and-age, reliability can apply not only to hardware but also software. By virtue of a device metaphor, it may be applied to mental phenomena like cognition, intellect, reason and other mental functions such as those responsible for breathing, eating, movement etc.

Reliabilism Opp. evidentialism. Generally, it is the philosophical view that the worth of a thing has to be judged on the basis of the reliability of the process which produced it. For example, in respect of the source-evidence controversy

of epistemology, the basis-of-belief is some reliable process of a source. According to this view, a source produces opinion, belief knowledge if it is likely to give an accurate view concerning some aspect of a domain or world. That is, an agent's basis of belief/knowledge is some reliable process for obtaining it.

Reliabilism, pragmatic According to Peircean pragmatism, what works is what is useful to achieving to end. For example, what works in survival is what is useful in successfully achieving survival. This is determined by the consequences of processes, including actions. However, this is not enough. Success may be a one-off or due to mere luck. An agent or species has to be able to rely on those adaptive features, capabilities etc in the future for survival under similar adverse circumstances. Hence, they have to be adequately or sufficiently reliable.

Rhetoric The theory (and practice) of persuasion in discourse. Rhetoric can be viewed as a division of dialectics.

Rhetorical power The power of persuasion possessed by an agent or group.

Rule A basic schema for a process of cognition or action. According to a content-act conception, a rule is a basic act e.g. operation, process represented as a content.

Rules and regulations See code of conduct.

Rules of inference Syn. logical rules. A schema for a pattern of inference used by an agent.

S

Satisfaction Process or action that meets the requirement of some purposive process e.g. desire, urge, plan etc.

Scale A scale of measurement.

Schema pl. schemata. A mental or cognitive structure of an agent's mind. A schema may be specified according to a content-act conception.

SEC Source-evidence controversy. The controversy between those who base their notion of knowledge on the reliability of sources of information (epistemic externalism, reliabilism) as against those who base it on the strength of reasons, arguments, evidence or case (epistemic internalism, evidentialism).

Self A totally reflexive agent. Such an agent is aware of and reflects on its mind, body and its relationship to the self, others or the world or the universe.

Semiotics Language and other sign systems are central to cognition and communication – especially conversation – in discourse. A proper sub-type of semiotic is dialectics, which is concerned with disputes e.g. debates in discourse.

Set An collection of things based on criteria. According to structuralism, it is a structure of things based on similarity or typological relationships.

Sigmoid conjecture The opinion-persuasion relation with thresholds (dependency) for an agent (or group) in an evolving population (of a species) is best described by a function from the class of sigmoid functions with thresholds.

Sigmoid function/s They are sometimes called S-shaped functions (or curves) because of their similarity to the integral sign that is an old form of the letter S. The curve of a sigmoid function is "a monotonically increasing curve between two horizontal asymptotes and having a point of inflection" [Nelson pp.234-235 1998]. The Gaussian (normal) distribution of statistics, and many other distributions, have a sigmoid form. For opinion-persuasion relations (with thresholds), there are two options to consider. They are:

(1) S-shaped functions with asymptotes.
(2) S-shaped functions with a floor and ceiling.

Which of the two equation types is appropriate? Generally, type-2 seems appropriate. It reflects the medium in which the function is realized; that is, a mind or its equivalent of finite, fallible agents. Such systems operate within finite bounds.

Sign system A strict (formal) semioticism rests on the medieval insight of a language metaphor. Thus, the thoughts and processes of the mind, let alone what's communicated between them, involve systems which have features akin to languages. On this basis, a sign systems S (in the sign space Ø) consists of:

(1) A sign system S is a sub-set of the sign space Ø.
(1) There is an alphabet A of S. An alphabet is a finite set of symbols (or basic signs) such that it is a subset of S.
(2) A sign s in S is some schema (i.e. a basic or composite sign) in S.
(4) A grammar G of S is a finite class of syntactic rules for constructing schemata in S.
(5) A sign system S is realised/implemented by some sign-processing machine M.

This definition of an arbitrary sign system S appears general enough to cover cognition and/or communication in the discourse of mind or community.

SOE Standard of establishment.

SOP Standard of proof. The BOP has to be fine-tuned to work well. Getting it right for the context, circumstance and domain involves a juggling act of factors relating to the (parameterized) CPR-T. They include:

(1) Support regimen. The guidelines for an intellectual value system concerning the worth – merits and demerits – of support bases.
(2) Support-strength schedule. The guidelines for the assigning of support strengths to support bases.
(3) Belief-support curve. The guidelines for an appropriate form (or shape) of the graph of the CPR-T.
(4) Benchmark of proof. The guidelines for the positioning of the thresholds of satisfaction of (3) above.
(5) Preponderance & decision-making procedure.

All such constraints can be directed to maximising the chances of targeting the truth of the matter while minimising the investment of resources i.e. time. effort, monies etc.

Source (of information) A system or mechanism that produces information by (say) generation or transcription from another medium. Some functions or faculties of mind are sources of information e.g. observation, memory, intellect etc. Sources may be interpretative to some extent but there is nothing to suggest that they produce opinions, claims etc. as such. They merely present the agent with information e.g. experiences, propositions, theories etc. What is done with the information in the CA of an agent's mind is another matter. Clearly, a source is not enough to effect an opinion or claim. According to source-evidence compatibilism, hat more is required is influence.

Source-evidence controversy See SEC.

Spectrum of knowledge According to Hetherington's gradualism, it is the grades of knowledge based on a scale of degrees of (generalised) support. Other attributes associated with belief and knowledge correspond to this central scale.

Space of possibilities A class of un/constrained criteria-based combinations of things from a base class of things. Given a set of elements, then a space

consists of all possible combinations. A space can be subject to combinatorial constraints; these are conditions which limit permissible combinations of possibilities and still define a space of some kind. A system or domain in the universe has an associated space and can be additionally described in terms of potentiality. For example, a language L is the class of all strings formed from an alphabet A using a grammar G(L) in an enveloping (possibility) space of strings.

Standard The system of ideas, values, rules etc. of a community. For example, the practices of a discipline is determined by a standards body, a dominant regime or consortium of regimes. There are two types of standards based on their origin. A *de jure* standard is determined by some decision-making body, usually a standards body or a consortium of standards regimes, concerned with setting, promoting and governing the standards of a given discipline. Alternatively, a *de facto* standard is determined by the marketplace of ideas. Some groups within a discipline are potentially standards-determining regimes amongst the practitioners of that discipline.

Standard of establishment See SOE.

Standard of proof See SOP.

State-space conception

Strategic capability This is determined by an agent's strategy-base and resource-base.

Strategic criticism The view that the activities of agents in a debate involves the use of strategies of criticism determined by the contingencies of disputing.

Strategics The theory (and practice) of strategy or strategic conduct in discourse. Strategics may be viewed as a division of dialectics.

Strategy A general plan to achieve an outcome (terminal condition) in response to certain cues of the mind or the environment.

Strength A measure of the degree of influence or force. A force-field concept appropriated from physics and used to characterised the degree of psycho-social influence or persuasion (i.e. persuasiveness) of appeals, arguments or evidence. A measure of such strength is persuasive support strength for appeals and its cognates.

Structuralism Syn. ontological structuralism. Ontologically, any thing is a system. A system is that which has structure. The structure of a system is reducible to relata and relationships, either of which can be basic or composite in nature.

Structure According to ontological structuralism, the relata and the relationships between them in a system.

Structure, typological A structure based on similarity relationships. It is a proper sub-type of mereological relationships.

Structure, mereological A structure based on part-whole relationships. According to structuralism, a whole consists of parts which are relata and relationships; that is, a whole is a structure. An alternative view, if not a classical one, is that the parts of a whole are the components and not including the relationships between them.

Style A characteristic way of being of agent or some aspect of an agent such as its mind, cognition etc.

Support Ant. opposition. Some basis-of-opinion for taking an attitude toward holding an opinion or claim.

Suspension Syn. suspend, withhold judgement. A neutral or indifferent attitude toward a thing.

Synectics The theory (and practice) of opinion change and development. This tends to involve competing regimes (with their associated ideology) vying from dominance (control) within a community or society at both the object- and meta-level of consideration. Synectics may be viewed as a division of dialectics.

System A thing with structure. See ontological structuralism.

T

Theoretical framework A system of theories and the inter-theory relationships that obtain between the theories.

Theoretic-level of consideration Syn. theory-level of consideration.

Theory A theory is sometimes defined as a conjunction of propositions, which makes a theory a composite proposition. Here, a theory is restricted to a body of propositions that at least exhibits the features of relevance (to a class of domains or worlds) and coherence. Usually, an aspect of coherence is the logical consistency of the body of propositions. Also, it is conceivable that an account of the body of propositions can be given In terms of the conjunction of propositions. Given a standard such as the one specified above, it is possible to speak of good and bad theories.

Theory of mind See TOM.

Theory-level of consideration Cp. concept-level of consideration. A consideration of a theoretical framework at the analytic level of theories and the inter-theoretic relationships.

The passions Syn. passion, HH infrastructure. An infrastructure of the CA of an agent's mind consisting of motivating mechanisms, the driving-force of thoughts, feelings and action. The passions include instincts (innate interests) and learned interests. Normally, agents have a natural preference for pleasure rather than pain (displeasure). Agents prefer those things that satisfy their interests and bring pleasure.

The two faces of opinion Agents tend to hold a public and private opinion of claim with regard to a topic or issue. Depending on circumstances, the public and private opinion are the same or different. See opinion, private/public.

Threshold A cut-off line on a scale for a graduated attribute. For example, according the open CCTB model, a cutoff line beyond which a claim or belief becomes knowledge. This notion is based on the legal notion of a standard of proof used in the law of evidence.

Threshold of establishment Syn. BOE.

Threshold of proof Syn. BOP.

Threshold of satisfaction See TOS.

Threshold theory See TT.

TOM Theory of mind. As an agent grows and develops within a community, they more-or-less develop a model of the internal workings of an agent's mind, which includes the self and others. According to Mill, this is due to analogical reasoning based on the workings of its own mind.

TOS Threshold of satisfaction.

Topic A body of opinion that forms the context for the discourse of discussion or debate.

Truth The nature of thought in relation to some domain, world or universe. A thought is the case or is true if it is epistemically right with – i.e. properly "tuned" into, correctly represents, mirrors etc. – a domain or the world; otherwise, it is false.

TT Threshold theory. A theory of knowledge based on the attainment of a threshold on some scale for a graduated attribute used to define (a state of) knowledge. Compare with LT and GT.

U

UAS Universal appellation/argumentation scheme. An abstract general pattern of appeals or arguments used in any debate.

Un/Certainty See certainty. Perhaps because of the recognition of the fallibility of finite agency, there is a tendency to use "uncertainty" rather than certainty.

Universe An organisation of all things. An organised class of worlds.

V

Vagueness Syn imprecision.

Value (system) A value in a context expresses a preference for one thing rather than another. For example, an rational agent prefers to be guided by rational principles rather than irrational rules; hence, the rational agent values a rational principles and that principle is said to be a value of the agent. Values taken together constitute a value system of an agent or community.

Verisimilitude Syn. likeness to truth, truth-like. The alethic accuracy of a proposition or theory in relation to some domain or world. It is one account of the shorthand expression "degrees of truth".

W

Weight Net persuasive (support) strength for the ground or case of a position in a debate.

Weight of evidence The net probative force of evidence used to strategically develop a case for or against an opinion or claim.

World A class of inter-related domains which share common features of attributes. E.g. the physical world, the social world, the world of politics etc.

Worth A general abstract notion of the goodness (as well as indifference or badness) of a thing. Using a scale of worth, it is possible to compare and judge a thing as better or worse than another thing.

X, Y, Z

Zero values Generally, there are two positions on zero as regards scales of attributes like un/certainty, persuasive support strength, probability etc. They are:

(1) Zero exclusion. A zero value is excluded from the scale of measurement for a quantity. For instance, it doesn't make sense to talk off zero uncertainty (or probability) or zero persuasive strength. Apparently, there is no belief or persuasion as such.

(2) Zero inclusion. A zero values are included in the scale of measurement for a quantity. For instance, it does make sense to talk of zero uncertainty (or probability) or zero persuasive strength. Apparently, there is a proposition or appeal form with this attribute even though has a zero value.

Generally, the view that zero is a place-marker favours the last option.

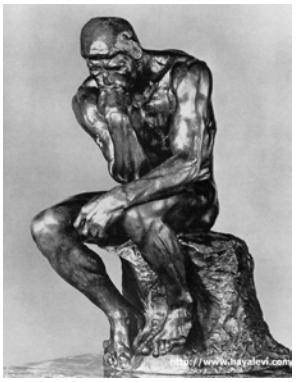
THE PERSUASION-KNOWLEDGE GAP

A philosophical inquiry into the philosophy-rhetoric controversy that aims at a reconciliation of disciplines by means of a unified dialectical-rhetorical framework for debate and persuasion, which is then applied to belief and knowledge in discourse.

UNOFFICIAL SUPPLEMENT

APPENDICES:

4. Replies to Examiners
- **4.1. Reply to Examiner A**
- **4.2. Reply to Examiner B**
- **4.3. Reply to Examiner C**



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Michael Leslie Forshaw
Doctorate in Philosophy (Ph.D)
The University of NSW
2007

This document is an unofficial supplement to my thesis; that is, it was not an official requirement of the examiners that I reply to their critiques. However, I have done so as it is fresh in my mind and it is an opportunity to address concerns that may have arisen anyway in the academic development of this work before, during or after publication as a book.

4. Replies to Examiners

I have carefully considered the critiques of each examiner; and I have given a critical reply to each examiner's critique below.

There are some general concerns identified by the examiners. Prior to the time of submission, I had to edit the thesis and thereby remove various sections – that amount to 50pp – to keep within official bounds. My supervisor is aware of this and can corroborate this claim. Some of this work would have addressed some of the concerns expressed by examiners. There are areas of work that are mentioned by the examiners that I'm aware of, have research notes on but elected not to address in detail, mainly because of time and other thesis limits. They are:

(1) Dialogical models
(2) Pollock's work on argumentation and reasoning
(3) Bayesianism and Bayesian epistemology
(4) Various conversational forms relating to (1).

These topics were not omitted as such. They are recognized and touched upon but not given an adequate treatment according to some of the examiners. My replies to the examiners suggest to me, given my own line of inquiry, that their minority treatment is not a major concern. Indeed, I make the point that in focusing on a the jurisprudential model as a guiding paradigm that it is, in itself, a contribution to understanding debate and therefore can contribute to game-theoretic research of discourse. The areas listed above need to be taken into account in an extended work that relates to a general theory of debate. Such a

theory would focus on opinion, mind and community in discourse, with claims and a theory of knowledge as a special topic.

4.1. Reply to Examiner A

Below are my responses (normal type) to the critical review of Examiner A (bold type) in respect of my PhD thesis. Criticisms are numbered for easy reference. Cited works are listed in a common reference list.

4.1.1-4.1.4. I would have expected the following:

1. **A clear case that rhetoric has a useful role in dialectic.**
2. **A clear case that dialectic is conducive to discovering the truth**
3. **A clear case that dialectic is also conducive to the other characteristics of knowledge, in addition to truth.**
4. **Either an analysis in terms of Bayesianism or a detailed case against Bayesians.**

First, I shall address this criticism in general. It remains to be seen that your proposed research program can do the job. It is noteworthy that your proposal doesn't address the very nature of these disciplines in the history of ideas. It is intuitively obvious to some of us – including Aristotle, Cicero and others of the past – that (the dialectics of) philosophy i.e. rational debate of the true and good and rhetoric i.e. persuasion in respect of one's interests are somehow intimately related to one another. How to show this is another matter. If it was so easy, it would have been dealt with by equal or better minds of the past.

My research framework was carefully outlined in my introduction with additional supporting material in the appendices. It highlights a (meta-)philosophical problem with a long history of its own. My research framework has its own recent intellectual history in respect of the incommensurability of theories and the problem of inter-theoretic integration or what Johnson calls the (conceptual)

network problem of reason. The issue that is central to my thesis arises in this context and history. This issue – the philosophy-rhetoric controversy (PRC) and the underlying knowledge-persuasion gap (PKG) -- is centuries old because, in my view, it's a hard nut to crack. I have endeavored to crack that nut.

Basically, my aim was to go from opinion and persuasion based on appeals, take into account the operation of Reason or otherwise; and then on to claims (alethic opinions, also called beliefs and knowledge) and rational persuasion based on (evidence-based) arguments. Simply stated, in a dialectical-rhetorical framework, claims – the overt face of belief and knowledge in discourse – belong to a proper sub-type of opinions in a context of contention and persuasion. The common unifying schema the opinion-persuasion relation with thresholds (OPR-T) and consequently its CPR-T sub-type. All this was done in the context of debate in discourse. An understanding of debate in discourse was informed by abstractions from a Jurisprudential Model, not a rigid concrete conceptual compliance to it. Ultimately, this gave me a theoretical framework in which to address the PKG and the PRC

Now I specifically address each point.

4.1.1. A clear case that rhetoric has a useful role in dialectic.

The nature of these disciplines is more-or-less critically discussed in the following areas of the thesis. Both are discussed in the introduction (pp.2), conclusion (pp.383-385, 389-393) and the appendix 4.3 (pp.400-402). Also, dialectics is discussed in chapter 1 (p.24) and rhetoric is discussed in chapter 2 (p.80).

Persuasion (rhetoric) is the driving force of critical discussion or debate (dialectics) in discourse. In addressing rhetoric, one must recognize different cognitive styles, including irrational ones.

4.1.2. A clear case that dialectic is conducive to discovering the truth.

In chapter 5 I apply the ideas developed in chapters 1-4 for opinions generally to claims (alethic opinions), the public face of beliefs and knowledge. To do this, I have to deal with alternative scale-based knowledge theories of epistemology and address some contemporary problems.

4.1.3. A clear case that dialectic is also conducive to the other characteristics of knowledge, in addition to truth.

Knowledge comes from belief. Beliefs are essentially claims (alethic opinions) that are contested in mind or community. Thus, belief and knowledge are ultimately opinions that agents accept or reject on the basis of some regimen of persuasion, be it rational or otherwise.

4.1.4. Either an analysis in terms of Bayesianism or a detailed case against Bayesians.

In your critique there seems to be a presumption that Bayesianism is central, even crucial, to the case that has to be made in conceptually and logically relating persuasion and knowledge in the context of discourse; and with due regard to reason and rationality. It is arguable that the current discourse of epistemology suggests that this is presumptuous and contentious stance.

I mention and briefly critically discuss Bayesianism in chapter 2 pp.134-35 (it rests on the probability calculus), chapter 5, pp.356 (different theories of probability) and pp.363-64 (against Bayesianism). In my account, I focused on the representative theories of Chisholm and Hetherington that explicitly address knowledge along with belief. Briefly, in what follows are some criticisms of the Bayesian stance:

(1) Misappropriation of a Mathematical Form

Bayes' theorem concerns conditional probability. This well-accepted mathematically and is uncontroversial. However, Bayes' rule for belief revision

is based on an intuition that the mathematical form of conditional probability applies to the claim-evidence relation and belief revision. However, this is controversial and might well be case a misappropriation of a mathematical form.

(2) Statistician's Rebuke

Bayes' rule has polarized statisticians. They classify themselves as either Bayesian or non-Bayesian statisticians. The non-Bayesian critique is that, though the axioms of probability are accepted as given, the Bayesian approach is not based on frequency studies. This means that the Bayesian rule is wrong or the probability notion is something else. It really is about some numerical degree of belief. So the use of the mathematical form of conditional probability for belief revision seems suspicious.

My proposal of the Sigmoid conjecture as the basis for the opinion-persuasion relation, including the claim-evidence relation as a sub-type, and opinion/belief revision does not have this problem. As I argue in chapter 5, guided by a device metaphor it is possible to base rational persuasion - via argument and evidence - on reliability measures obtained from statistical studies proper.

(3) Problem of the Initial Value

Bayesian statisticians have not proposed a reasonable or plausible basis for determining initial values for any use of Bayes' rule.

The framework in which I propose the Sigmoid conjecture accepts fallibilism and the presence of some initial given "personal equation" that can be experientially transformed through trial-and-error learning.

(4) Dialogical Inadequacies

Bayesianism fails to adequately accommodate support, opposition and retraction in dialogue and debate. Given its commitment to the axioms of

probability, it has to consistently use negative probabilities to accommodate opposition. These are not concerns associated with my proposal.

(5) Weak Explanatory Power

Bayesianism can't adequately account for real belief revision, let alone opinion revision generally, as it operates in the mind of agents engaged in the discourse/s of a community.

(6) Individual Differences and Style

Bayesianism doesn't recognize individual difference. I'm referring to the difference of opinion as to what probability value (i.e. degree of belief) assigned to any evidence. Where there is a common ground esp. where rational agents are involved, there has to be an agreed schedule of probability assignments for different types of evidence. This would constitute a norm (or normative standard) for a community. How then is such a schedule arrived at if not through debate, which In turn requires some common ground to work and its associated evidential basis....and so on.

My approach, based on the parameterized OPR-T graphs, naturally recognizes individual difference between agents or in the same agent over time; and offers a mechanism by which a common ground i.e. a shared OPR-T can be arrived at without any initial foundation.

(7) Old Evidence and Revolutionary Changes

Earman [1992] in his *Bayes or Bust?* offers a strong critique of Bayesian confirmation. He finds "Bayesianism incapable of addressing

(1) the problem of old evidence
(2) accommodating changes of belief

in so-called scientific revolutions" [Ruetsche pp.160-161 v.3 2005] and, I may add, other contexts of belief change.

(8) Missing Force of Argument

Bayesianism emphasizes probability talk over, or disregards, the force of argument. Strevens [p.502 v.1 2005] puts it this way:

> There is no doubt that scientists sometimes talk about accepting theories and about the strength of the evidence – and that they do not talk very much about subjective probability. .....

They do talk about being relatively certain or having doubts about the truth of a theory or hypothesis in association with "the strength of the evidence". Bayesians shun such talk or attempt to re-dress the notions like support or weight of evidence in subjective probability outfits. The force of argument and its cognates are expunged from the fabric of discourse.

(9) Bayesian Epistemology as a Chisholmesque Variant

From my reading of your brief critique, a Bayesian epistemology based on Bayes' rule, degrees of belief, Cartesian certainty and robustness seems to be your preference. Presumably, you have knowledge when your claim (i.e. belief) in debate is supported by the evidence such that it is robust in the face of challenges and is therefore attains certainty (i.e. probability=1) because of this. Putting aside Bayes' rule, this view is akin to Chisholm's theory of knowledge and his scale of epistemic attainment. If you remove the defeasibility conditions used to define different grades, the scale of negative values and add Bayes' rule, then you have a basis for updating belief along the scale. Next, you add a robustness requirement for certainty (probability=1). Granted, in retrospect, I could have discussed this; however, I took Chisholm's theory as the representative of the class, primarily because of its full treatment of defeasibility in discourse and consequently its comparability with Hetherington's gradualism and thresholdism.

My account doesn't require any supplementation. Claims (i.e. beliefs) are opinion sub-types; and, consequently OPR-T graphs have CPR-T sub-types. The threshold enables value-added beliefs that satisfy the conditions for knowledge. Furthermore, my open contested certified true belief (CCTB) model (that includes the parameterized sigmoidal claim-persuasion relation with thresholds or CPR-T), allowing some latitude, accommodates extreme accounts of knowledge like Chisholm's cognitivism (and even Bayesianism) and Hetherington's gradualism. For models where probability=1, You can set the threshold at 1 for a sigmoid function with a floor and ceiling.

(10) Bayesianism and the Law

Bayesianism has attracted those who wish to understand how dis/belief work in courts-of-law. A noteworthy collection of articles on this is due to Tillers and Green [1988], which I came across toward the end of my official research time. Clearly, this is relevant to my work given that it is guided by a jurisprudential metaphor, at least in respect of key abstract notions. The collection highlights just how contentious the topic of belief revision in law is in general and the application of Bayesianism in particular. Bayesianism is nowhere near a fait accompli in the this context or others such as science, philosophy and medicine.

Here are some other comments:

4.1.5. I commend to the candidate a brisker style. I guess this is a matter of rhetoric. The candidate too states the obvious or labors elementary points.

I grant that a "brisker style" is desirable.

You don't point out some examples so that I can appreciate your perception. Your point regarding the obvious and labored points most likely arises because

of my approach outlined in the introduction, which may be characterized as follows:

(1) Back to basics;
(2) Not being presumptuous;
(3) Building a foundation

This was done to minimize misunderstanding of and quibbling over concepts, especially fundamental ones, and any snowball effect on understanding my theoretical framework. By this I'm referring to the ".....but what do you mean?" response. Hopefully, the outcome is a firm foundation of key abstract concepts and relationships, inspired by a jurisprudential model as a *guiding* paradigm. On this I have two points to make. Firstly, any work by a philosopher are likely to have a number of persons from their readership who will say "that's obvious" and/or "that's laboring the point" and so on. To a certain extent, it's dependent on the background of a reader. A properly conducted survey of expert opinion would test this point. Secondly, there is a difference of conception and terminology in studies relating to debate, argumentation, critical thinking/reason etc. Given the semantic slipperiness of everyday language use and the difference points of view of philosophers (and their corresponding use of terms and expressions), I've gone out of my way to be explicitly up front about my use of terms and expressions. Some may find this pedantic and laborious while others will welcome the detail. I concede that it's a hard line to walk between these two reader attitudes. I hope to get better at this with experience and reflection on this requirement. One approach is to confine basic etymological critical discussions to a detailed glossary; and only use the arrived-at definitions in the text of the thesis. Highly contentious terms and expressions are critically discussed and defined in the body of the thesis besides appearing in the glossary as well.

4.1.6. p.32 It is useful to follow Pollock and distinguish rebutting from undermining (undercutting) defeaters.

4.1.6.1 Pollock's Work

I see this as a minor point of criticism because even if there are other argument forms to take into account, they can in principle be grafted onto the Universal Argumentation Scheme (UAS) examined in chapter 4. By subsumption as a sub-type or extension as a new type etc.

I took extensive notes on Pollock's work on defeasible reasoning across several sources i.e. books, articles. His language use, and the consequent underlying concepts, differ from mine; and, therefore, I would have to take issue with them before incorporating some. Other authors who differ include Zarefsky. I elected not to do so, due to constraints, as on the way to conceptually connecting persuasion (rhetoric) and knowledge (epistemology). However, I did focus on Zarefsky's work as he uses similar terminology and bases everything on rhetoric and persuasion. I just needed to give a general account of the strategic use of appeals and arguments in discourses of debates.

It maybe useful but is it essential to include Pollock's work to make my case? I don't think so. This is not to discount Pollock's work, which I'm aware appears across a few books and a number of articles that appear in relation to different disciplines. However, there are differences in conception and language use I would be obliged to address, let alone the fact that the aforesaid distinction is made in a theoretical framework of defeasibility that he is developing.

4.1.6.2. Defeasibility and Defeaters

Defeasibility is a wide-ranging feature. Generally, Blackburn [p.91 2005] states that to be defeasible is to be

> Capable of being overturned by further events. At law a judgement is defeasible if a higher court may overturn it. A proposition is defeasible if further evidence may render it doubtful.

A specific account is given by Nute [p.184 1995] who defines it as follows:

> Defeasibility [is] a property that rules, principles, arguments, or bits of reasoning have when they might be defeated by some competitor. .....

What does the job, and thereby highlights this feature, is called a defeater. This notion is due to Pollock. In a short article on defeasibility, Nute [p.184 1995] briefly discusses Pollock on defeasible reasoning. He notes that Pollock

> distinguishes between rebutting and undercutting defeaters. 'Snow is not normally red' rebuts (in appropriate circumstances) the principle 'Things that look red normally are red', while 'If the available light is red, do not use the principle that things look red normally are red' only undercuts the embedded rule. ....

How do/can defeaters fit into my theoretical framework? Defeaters are mainly the following:

(1) Appeals and arguments. An appeal or argument defeats another appeal/argument in discourse. Based on strength, it cancels out the persuasive impact of its target. It seems to describe a special kind of opposition.

(2) Ground or case. A ground or case is a defeater if its weight (net persuasive support strength) meets or exceeds a standard of establishment or proof in relation to the ground/case of an opposing position/s.

The ideas I express have a defeasible character. In retrospect, Pollock's defeater concept seems to be a worthwhile contribution to understanding a turn-of-events in a debate (contest of persuasive strength) and the state of being defeated whether or not the undercutting/rebutting elaboration is worthwhile requires further consideration.

Given the above, in my theoretical framework, it can be applied to opinions (including claims), appeals or arguments, ground or case, and I suppose positions as they are composites of the previous notions. With regard to positions, one can defeat another. Conceptually, this "trickles down" to its

opinion and ground/case components. The opinion of one position defeats another only if its ground/case defeats the ground/case of opposing position/s. Then it has satisfied some requirement of being good, right or true.

Nonetheless, I will take up Pollock's work when developing my own theoretical framework on debate in the future.

4.1.7. p.33 The definition of contrariety: insert "only" in front of "one".

Changes have been made in accordance with this criticism.

4.1.8. p.43 I am puzzled about the "intellectual value system;'. Here are some suggestions:

(a) love of truth as an end: people say they love truth but do they?
(b) love of truth as a means
(c) hatred of falsehood:
(d) fear of falsehood

I merely wish to point out that there are ideas, rules etc of the operation of mind, or specifically the intellect or Reason, that an agent tends to value over others. They constitute a system of values that the agent uses to regulate its thinking, feeling and action. Values, as I point out, are preferences (say) over the possibilities recognized by mind. For example, chapter 3 focuses briefly on some rational principles that govern the conduct of an agent as per mind and action. I draw attention to a minimal set of key principles that will become crucial to regulating rational persuasion via arguments and case.

As agents with an intellect and the potential for Reason develop and gain experience, issues arise as to the governance of one's mind, especially with regard to perception, thoughts, feelings and action. As we begin to value certain aspects in mind, we begin to develop a value system in respect of the operation of mind in relation to the self, others and the world at large. For example, one

crucial aspect is truth. In informing our thoughts, feelings and actions, what is true is preferable to what is false or indeterminate.

A notion of style e.g. cognitive style recognizes the diversity of minds, especially the mental preferences they exhibit. This applies to the class of rational agents as well. In work left out, I developed a classification of agent types.

4.1.9. p.48 What is wrong with reliabilism?

I'm not sure of your reference to reliabilism for this page. Still, I don't have a problem with reliabilism *per se*, though it seems to me that it is sometimes construed narrowly by some. See my favorable account in sections 5.3.1 and 5.3.2 of the thesis where I deal with the source-evidence controversy (i.e. the internalist/externalist debate). I uphold reliabilism in its most broadest sense; and recognize that certain objective rational principles come into play that relate to public scrutiny via a shared language and that argument forms expressed through this language can be assigned reliability measures.

Because of this rational requirement of public scrutiny via a shared language that is the basis of debate, I judged it more appropriate to refer to my stance as compatibilism in chapter 5 wherein I apply the dialectical=rhetorical framework to the belief-knowledge distinction. Still, it is emphasized that a general reliabilism is central to it.

4.1.10. p.48 But surely the jurors are concerned about falsehood.

4.1.10.1. Courts and the Story Model

The participants in a court of law have to deal with stories. A set of claims – a story, actually – are made by both sides and each is supported by a strategically developed body of evidence within the bounds of a code of conduct for a court-of-law. The story model is familiar in the psychology of law but not well understood. Work on multi-propositional claims or "stories" have been dealt

with by me and are not problematic in my theoretical framework. Work related to single- and multiple-propositional claims was removed from the thesis due space and prioritization.

Jurors have to make formative judgements as to the truth of the claims that make up a story. Each little claim of a story may in itself have evidence that may amount to a proof, though it need not be. The big claim – or the story – is more than the sum of its parts. Given this, I also dealt with how to combine the support bases of little claims into one for the big claim or story. When they finally make their summative judgement it as to which if any position – defense or prosecution – has proved its case. The (jurisprudential) truth of the matter is held by the position that has met the burden of proof.

4.1.10.2. Truth and the Jury

the use of “truth” above is now given an account according to the thesis. I take truth to be an n-valued variable where n=3. That is,

Truth = { True, Undetermined, False}

When I use “truth” I don’t necessarily imply an interest in only what is true, though the use of “truth” is sometimes used to suggest this. Given this, when it is said that the jury, in human part (i.e. the members) and as a whole, are concerned with truth, I mean to say they are interested in determining what is true, false and undetermined. The debate that occurs in a court of law is the basis of their alethic determination/s. Further to the issue you raise, I refer you to section 3.3 of the replies regarding the jurisprudential model.

4.1.11. p.83 The date reference for Austin is wrong.

You are right. This was supposed to have been changed but I inadvertently overlooked it while editing the final draft. My bibliography makes no such error. The appropriate date is 1961 for his Philosophical Papers. The rudiments of

speech act theory appear in an earlier article “Other Minds” by Austin [1946], which is part of the collected papers..

4.1.12. p.l02 Does the agent have to accept p or not-p? Isn't it better to say the agent has to accept p or reject p?

Yes. It’s about accepting p, reserving-judgement-of p or rejecting p. The same applies to not-p. I thought I removed all such earlier references to p and not-p. I spent some time puzzling over the logical relation of conflicting opinions (or claims) in relation to the OPR-T (opinion-persuasion relation with thresholds). Such a concern is indicative of the conceptual interface of dialectics and logic.

4.1.13. p. 111. While I have no objection to using 0 to 1 as the interval for degrees of confidence the candidate's suggestion that confidence be measured by energy of brain processes seems very odd. I would suspect the neurophysical correlate is something to do with frequencies of spikings. The test case for deciding on the scale to be used is whether it is rational ever to have equal (low but non-zero) confidence in infinitely many pairwise incompatible alternatives. If so we need an infinite scale.

4.1.13.1. Scale for Confidence.

Based on experience alone, we can all appreciate that confidence is bounded and may be conveniently represented on the normalized interval [0,1]. For example, it’s easy to appreciate having no confidence and being full of confidence or fully confident based on experience alone. See p.116 of the thesis for an extended discussion.

In the framework I have attempted to develop, confidence (agent) or uncertainty (opinion, claim) correspond to each other; and that, irrespective of the incompatible alternatives, an opinion (or claim) has a degree of net uncertainty in the interval [0,1] that depends on the weight (aggregated persuasive support strengths) of the ground or case that is strategically developed in discourse.

Depending on the contingencies of discourse, some opinions may periodically have or end up having the same uncertainties with respect to the agents separate OPR-T or the same uncertainties on a common OPR-T that functions as a standard within a community.

4.1.13.2. Scales and associated Energy of Brain Processes

I don't think I said/meant that. Is not spiking a brain process? I merely point out that the dynamics of the brain has scale analogues (say) that somehow related to energy in the system e.g. amplitude, frequency – of spiking if you like – etc. We need neural energy-levels of some kind to dynamically represent linear or non-linear scales for certain features. This raises issues of a neural code for which research is sparse at this time. Though the notion of a neural code is not new, work in this area is sparse over the period mid-20th century to now. Scientific American has occasionally published articles on this. What I'm interested in is a neural analogue for measuring instruments i.e. their dials, scales etc. Essentially, they rest on energy levels. Guided by this analogy, we need neural energy-levels of some kind to capture scalable features.

Clearly, there are bounds to any dynamical representation due to the physical limits of the energy ranges that a brain can sustain. For example, at what level of electrical (or electrochemical) energy does a brain begin to cook (due to thermal energy release). Perhaps I need to make my point in a (say) more elegant way.

4.1.14. p. 114 There is something in common to the belief that there is an afterlife, the hope that there is an afterlife, the fear that there is an afterlife. Isn't this something in common the proposition that there is an afterlife?

I agree. But is not the presence of some attitude also something in common? For instance, consider these triads:

(1) belief – indifference (agnostic) – disbelief

(2) hopeful – indifference – hopeless

(3) fearless – indifference – fearful

.

.

. .... and others.

Attitude (1) has to do with whether an agent accepts, withholds judgement or rejects a claim as true. I call this the alethic attitude of an agent toward claim p. A similar query was raised by my supervisor, P. Staines in respect of attitudes generally. My response was that we can take different kinds of attitudes to things. I suggested, as I do in the thesis, that a pleasure-indifference-displeasure (or pain) triad underlies all attitudes and that a generalized OPR-T describes the dynamics. Likewise, “forces” of mind, flowing experiences, bring about an attitude or “stance” of the agent’s mind to things generally or in particular. Turning all this around, I speculate that some evolved primitive analogue of the OPR-T associated with (non-linguistic) experiences has evolved and informs decision-making – most likely even in other species, given that there are common ancestors.

4.1.15. p. 125 The Gaussian normal distribution does not have sigmoid form. What does have sigmoid form is its integral. But so does the integral of any positive probability density function with no more than one local maximum. It should be possible to derive the sigmoid form rather than just note that it fits our intuitions.

Much can come from following up our intuitions – that’s just the first step. I was guided to posit the class of sigmoid functions (or the like) based on thought experiments relating to a jurisprudential model to capture what I think generally happens in minds and communities as per dispute esp. critical discussion or debate.

I argued in their favor. I give reasons for why I consider that the class of sigmoid functions are probability the best candidates for describing the opinion-

persuasion relation with thresholds, which is probably underwritten by a more deeper (elementary) relation at work in the cognitive architecture of the brain(-mind). Also, in my view, this class of functions are versatile in approximating (looking-like) other functions. For example, linear functions. Though some people might suggest that the opinion-persuasion relation could be any of a number of functions, I don't think this is right. If so ,then the class of sigmoid functions can approximate them.

If you take Bayes' rule as an alternative, then the same criticism can be applied to it as well. For example, I would count Bayes rule as the result of an intuition that the mathematical form of conditional probabilities might apply to belief change/revision. Bayes' rule is Bayes' punt that such a mathematical form is appropriate in this context. I refer you back to my criticism of Bayesianism in section 4 of this reply.

You say "it should be possible to derive the sigmoid form". In what sense do you mean derive? Here are some options:

(1) Mathematical reasoning?
(2) Empirical studies?

If you mean by mathematical reasoning, on what basis is there to start and then conclude that a sigmoid form does the job. If you mean by empirical studies, then you are suggesting taking measurements and graphing the result according to some statistical regimen in a controlled experiment..

What I have done is use:

(3) Conjecture and reasoning.

This is a philosophical and/or theoretical variant of an aspect of the scientific method:

(4) Hypothetico-deductive method.

I conjecture the sigmoid conjecture, with arguments to support it. It is open to the ingenuity of scientists to engage in empirical studies that confirm or refute it in the long-run. Given future developments in IT and AI, it may be possible to set up toy worlds of debates between agents and test the mechanisms proposed in Ch.3 of the thesis. Computer-based precursors to this are avatars and Second Life.

4.1.16. When talking about forensics there are some cultural differences. I suspect the Roman/Continental can be contrasted with Greek/Anglo-Saxon.

I'm aware of the past varieties of meaning. The same can be said of "dialectics". However, in both cases, the meanings are closely related ones. This in itself is not seriously problematic for my thesis.

14.1.6.1. Language Use of "Forensics"

What are the facts of language use? As a starting-point, I examine some etymologies as facts. In doing so, I have a firm basis for conceptual analysis rather than the tentative intuitions often present in other analyses of ordinary language use. Onions [p370 1966] , on English etymology, offers the following:

> Forensic, pert. to courts of law, fr. L. *forénsis*, fr. *forum*.
>
> Forum (Rom. antiq.) marketplace, spec. in ancient Rome a place of assembly for judicial and other business.

At the same time, Partridge [p.228 1966] associates "forensic" with "forum" via "foreign". Thus:

> Forum has adj. *forensis*, of the forum as the orig[inal] centre of law business; hence *forensic*, legal – esp. in relation to speech.

Furthermore, Klein [p.290 1971] offers this:

> Forensic adj. pertaining to the law courts L. *forénsis*, pertaining to the forum, pertaining to public speaking, fr. *forum*, public place.
>
> Forum n. 1) a market place, esp. the market place of Rome; 2) a law court; 3) an assembly for public discussion.. ...

Another etymological source is due to Barnhart [p.400 1988] who offers the following account:

> Forensic adj. of or belonging to a court of law; judicial, formed in English from L. *forçns-*, the stem of *forçnsis*, of a forum (place of assembly) .....

Finally, the OED [pp.55-56 VI 1989] identifies two meanings:

(A) ”Pertaining to, connected with, or used in courts of law; suitable or analogous to pleadings in court.”

(B) ”A college exercise, consisting of a speech or (at Harvard) written thesis maintaining one side or the other of a given question.”

Meaning (B) goes back to scholasticism where candidates for degrees had to argue two sides of a question.

In summary, implicated in the use of “forensics” over the ages are the following features

(1) Issue of common interest;
(2) Public place or marketplace (forum);
(3) public speaking;
(4) public discussion or debate;
(5) Conduct according to Reason.

These features were generally associated with the legal proceedings of courts of law or other business in the public arena. Drawing from the background of

the history of ideas, to some extent reflected in the aforesaid accounts, we can roughly split these features into two accounts. Forensics is:

(1) Roman/Continental view. Public speaking in a forum (or public arena).
(2) Greek/Anglo-Saxon view. (Critical) discussion and debate.

I make the point in my thesis that (1) can be episode/s in (2). I think today's global academia highlights this. Many academic activities are really gross "conversational turns" in a greater debate on a topic or issue. Today, a setting can be a definite location, a network of locations or a shared medium like a journal.

4.1.16.2. Dialectics and Forensics

I'm using a notion of forensics that comes from Aristotle; and is sufficiently general to accommodate various concrete contexts and situations. I use it primarily to describe debate, including public speaking that has a jurisprudential-like character. I claim and argue this in chapter 3. I favor a jurisprudential model in abstraction and not in details. To appreciate this, it is necessary to describe the nature and relation of forensics to dialectics. I define them, as I do in the thesis, as follows:

(1) Dialectics. Critical discussion or debate of opinions in the discourse of mind or community. Public speaking e.g. at a conference etc. is a contributing episode of dialectics.
(2) Forensics. This is (1) that is concerned with rational alethic inquiry; in other words, rational dialectics of alethic inquiry.

This account shows that forensic activity is essentially a proper sub-type of dialectical activity where there is an emphasis on the primacy of Reason and inquiry into the truth of things, which is typical of Western courts of law when working according to good form..

4.1.17. p. 220 Is relevance relevant? Won't (2) and (3) do?

I'm just pointing out what van Eemeren and Grootendorst [p.12 1995] state. Also, I immediately make the point that the relevance condition is unnecessary as it is redundant given the sufficiency condition as the third listed condition Hence, a concur with what you suggest. I don't critically discuss this; and merely accept the redundancy as it is innocuous.

4.1.18. I do not understand the characterization of Relevancy. It is always logically possible to infer anything you do not already believe from anything you do.

Let me point out at the start that I had to compress chapter 4 ("Positions, Contest and Establishment") and chapter 5 ("Inference") of the original thesis into one chapter, which is chapter 4 ("Positions, Contest and Establishment") of the submitted official thesis. Originally, I would have critically discussed argument types and the problems of inference e.g. problem of implication, problem of induction, the paradoxes of logic etc. There is some discussion of these problems in section 4.4.2 concerning "Establishment and Proof". As Kirwan [pp.254-255 2005] puts it, the aforesaid problems and paradoxes have

> accordingly [led] some logicians [to] search for a different criterion [of inference] to escape the[m] and more generally to respect the feeling that a set of propositions should be required to have some relevance to what it entails.

More technically, Blackburn [p.315 2nd ed. 2005] observes that

> [some] logicians.....have sought to define relations of entailment stronger (more restrictive) than strict implication to preserve the distinction between good and bad ways of arguing, even in the presence of contradictions and tautologies.

In coming to terms with these problems I would have examined

(1) The notion of relevance

(2) Relevance logic
(3) Entailment

as the basis for viable solutions. This was the plan for the original thesis. Given the official constraints, I confined any discussion of relevance to “Cogency” on pages 224-225. Here, I take a natural cognitivist approach to inference. Important to this account is a notion of argument worth that is based cogency, which covers all argument types regardless of one’s stance in respective of the problems and paradoxes mentioned above. As I point out, relevance is crucial to making sense of cogency.

Your comment appears to reflect certain commitments in the philosophy of logic. I appreciate your point, which suggests to me that I need to sharpen up my definition of relevance. Consequently, I have refined my account of relevance as follows:

> Relevance. The extent to which a premise of an argument contributes to it being logically possible (as per logical calculus) to infer the conclusion within the semantic bounds of the available evidence (premise set).

The expression “semantic bounds” alludes to a content sub-space determined by the premises over which a propositional ordering and logical calculus are imposed. This account is underwritten by my views on the nature of logic, which is critically discussed immediately following by account of cogency on pages 224-235, especially pages 224 and 225.

4.1.19. p. 270 The quote from Grooten and Steenbergen suggests they are confused. Are they restricting proof to what is deductively valid or not? (Does 100% probable differ from deductively valid? If so will it do for proof?)

As I point out, there is much to take issue with here; however, I'm merely highlighting various attempts – few and far between – that attempt to make sense of "proof" in its use in different contexts.

4.1.20. p.282 It's good to quote Hobbes here, but isn't there something rather odd about the scales metaphor for deliberation? Just for a start how do undercutting defeaters fit in?

4.1.20.1. Deliberation

The scales metaphor, as I point out, I the basis for the insignia of the operation of the law. Simply, it weights up the two sides of the argument. This is borne out by its etymology. Barnhart [pp.281-82 1988] has this to say:

> deliberate adj. Probably before 1425; borrowed from New Latin *dçliberátus*, past participle of *dçliberáre* weigh, consider well (*de-* entirely + *liberáre* liberate to balance, weigh, from *libra* scale, of uncertain origin. .....
>
> deliberation n. About 1385 *deliberacion*, in Chaucer's "Troilus and Criseyde", borrowed from Old French *deliberation* or directly from Latin *dçliberátiônem*. .....

I reduce it to a comparing (weighing) and letting the scales "decide" which is the stronger position. But perhaps you are wondering how it works in the case of arguments and case. Suppose (persuasive support) strength reduces to a basic unit, the building-blocks of strength. This strength (or force) unit (u), is represented by a cube of matter (say); and we have scales that hold (or "record") the accumulated strength units under gravity. Each position A and B, as represented by agents, have "reserves" (or generator) of arguments (and associated evidence), some of which may not be used. A presents a supporting argument with a strength of 4u according to some schedule of strengths. B attacks it with an objection of -1u; hence, 1 unit is removed from the 4 units of A's position, leaving 3u. B then presents an opposing argument of -2u and thereby reduces A's position to 1u..... and so on. The sign represents the adding (+) and removing (-) of units from one side of the scales or the other. At

some point the positions are exhausted (attrition) or there is a time-limit. The scales then tell us what the net outcome is.

As for undercutting defeaters ,they can only be appeals and/or arguments. They have an official and unofficial impact. Rationally, only arguments strictly have an impact. See further comments below.

20.2. Rebutting and Undercutting Defeaters.

I refer to sect. 6 above where I address Pollock's rebutting and undermining (undercutting) defeaters. I had no intention to dismiss Pollock but to take him on would have required some work as our use of terms and expressions differ. However, I share the general thrust of his account. For instance, see how I use notions of undermining etc. However, I note that the jury is still out on these notions.

I present an example, due to Kvanvig [p.107 v.5 2005] and, at length, his critical discussion of defeasibility and defeaters. As an example, he asks us to

> ....consider one of the ways in which the simple defeasibility account is inadequate. Testimony by reliable persons often provides a defeater for what we would otherwise be justified in believing. Suppose we have visual evidence that a friend, Tom, left the library at 11 p.m. Our justification can be defeated if Tom's mother says that Tom has an identical twin that we did not know about who was in the library while Tom was at home fixing his mother's dishwasher. Whether it undermines our knowledge, however, depends on other factors such as who she reports this information to and what they know about her. It will not undermine our knowledge, for instance, if she fabricates the testimony to the police who are checking out a crime that occurred in the library, and the police have a large file of made-up stories from this woman in defense of Tom, who has a long criminal record, especially if the file contains precisely this concocted story, which the police have already checked in prior cases, discovering that Tom is an only child.

He then goes on to discuss the difficulties associated with defeasibility:

> The simple defeasibility approach was attractive in the search for an explanation of the value of knowledge because it is valuable to have opinions that no further learning can undermine. Once we see cases such as the above, however, the defeasibility approach loses this attractive feature, for one can have knowledge even when further learning would rationally undermine one's opinion. In such cases, it is true that even more learning would restore one's original opinion, but there is little comfort to be found there, for the same will be true of any true belief, since if one knows all there is to know about a given claim, one will believe it if and only if it is true.

He concludes:

> Defeasibility theories have had considerable difficulty in finding a condition that properly distinguishes when defeaters undermine knowledge and when they do not. The problem created by such approaches for the problem of the value of knowledge, however, is the tortured and ad hoc way in which various complex conditions are proposed to do the job. In light of the labyrinthine complexity that such accounts of knowledge display, no optimism is justified that such conditions will . track any value difference between satisfying those complex conditions and not satisfying them. It appears that the most warranted conclusion to draw is that the task of distinguishing cases of knowledge from cases of nonknowledge has been revealed to be so difficult that epistemologists make progress on the question. of the nature of knowledge only by proposing conditions that undermine any explanation of the value of knowledge by appeal to those conditions.

Clearly, defeasibility theories are confronted by the difficulty of finding a workable defeasibility condition for identifying true defeaters that undermine a strong belief or knowledge. In chapter 5, I give an account of the belief-knowledge distinction that seems to address the aforesaid concerns relating to defeasibility and defeaters. A claim (belief) p becomes knowledge when its case (rational ground) attains the status of proof where other positions can’t, thereby defeating those other positions. Furthermore, there is a re-open provision that allows the knowledge status of p to be brought into doubt. This re-open the debate. There is then the possibility that p is defeated and thereby loses its knowledge status, perhaps to another claim q.

Still, I intent to go back to his work and try and sort things out. My focus was on getting from raw persuasion (rhetoric) to knowledge (epistemology) via reason

and in the context of dialectics (as the theory of dispute in discourse). Hence, I had to avoid too many asides.

4.1.21. p. 284 It does not matter much but stalemate is a poor analogy. In a debate to have nowhere to go is to be defeated. A tie in cricket is a better analogy, because it is distinguished from draws due to running out of time.

4.1.21.1. Defeasibility and Debate.

You say: “in a debate to have nowhere to go is to be defeated”. Do you mean the debate is defeated (in some sense) or one of the positions in the debate? In any case, I shall address each interpretation via a distinction between debates and meta-debates.

First, consider positions in a debate. A position that has nowhere to go. Is it defeated? Yes, it can be. It is useful to apply the following distinctions:

(1) “being bettered”.
(2) being defeated.

With this distinction, outcome (2) is a special-case of outcome (1). Here, I’m taking inspiration from a quote from Hetherington that I use when discussing his epistemical gradualism. If both positions have the same weight (net persuasive support strength) and both are unable to deploy anymore appeals or arguments, then no position is bettered or defeated. If one position has a greater weight and no one can deploy anymore appeals or arguments, then no one is bettered but not necessarily defeated other/s. Finally, if one position has a greater weight and no one can deploy anymore appeals or arguments, then no one is bettered but not necessarily defeated unless the position with the greater weight has met or exceeded the standard of establishment or proof.

Now consider meta-debates. Can a debate (as a whole) be defeated? Perhaps it can be. Based on a standard of debate, it may be judged that one debate on the same topic or issue is poor or not worth of consideration and ought to be dismissed in favor of a better debate or arrangement of debates.

4.1.21.2. Debate and Game Outcomes

Let me start with some definitions from a reputable source. The following definitions are due to Soanes & Stevenson [2003] as follows:

> A tie is to "achieve the same score or ranking as another competitor or team e.g. Muir tied the score 5-5. ..... [Also,] a result in a game or other competitive situation in which two or more competitors or teams have the same score or ranking; a draw e.g. there was a tie for first place." [p1844 2003]
>
> A draw is to "finish (a contest or game) with an even score. ..... [Also, as in cricket] a game which is left incomplete for lack of time, regardless of the scores." [pp.527-528 2003]
>
> A stalemate, as in "chess, [is] a position counting as a draw, in which a player is not in check but cannot move except into check. [Also,] a situation in which further action or progress by opposing or competing parties seems impossible e.g. the war had again reached stalemate."

Just as an aside, there are a number of outcomes that need to be considered in debates. We may envisage a cube of possible outcomes based on the following distinctions:

(1) Moves not exhausted vs moves exhausted;

(2) Time-limit vs no time-limit; and

(3) $w(A)=w(B)$ vs $w(A)\neq w(B)$.

Here, w is the weight of the ground of each positions A or B in a debate.

4.1.22. Ch 5. Why should we want knowledge rather than mere JTB? Why should we want JTB rather than mere true belief? It hardly matters how we analyse knowledge unless there is a value attached to knowing. I suggest

that knowledge is good because robust, that is not likely to be revised. For that reason justified certainty must be knowledge, but when we consider uncertain beliefs of the same degree of confidence some are more likely to be revised than others. (Robustness is often called resilience).

4.1.22.1. Mere JTB

I'm not sure if there is a concern with "mere JTB"; however, I shall comment on it just in case.

I do give an account of why I make reference to mere JTB. I'm not the only one to express sentiments somewhat like this. Kvanvig [p.106 v.5 2005], in his discussion of "the fourth condition for knowledge", says:

> Knowledge.....is more than justified true belief; it is justified true belief where the connection between justification and truth is, in an appropriate way, nonaccidental. Various theories have been proposed regarding the appropriate kind of nonaccidentality that is required for knowledge, with the two most robust being the defeasibility theory and the relevant alternative theory.

The implication is that mere JTB is not enough – it is "more than" this. The original Platonic account of knowledge (as translated to English) is my target when I refer to "mere JTB" i.e. true belief with an account" because it is vague as to the nature of "giving an account".In more recent times, "justification" in JTB seems to be treated vaguely; that is, "justification" is open to interpretation like "giving an account".

4.1.22.2. The Value Attached to Knowing.

I agree with your basic knowledge requirement. There has to be a value attached to knowing. Guided loosely (a point I emphasize in Ch.3) by a Jurisprudential Model, my intent was to finally come up with a decision procedure that enables us to decide when an alethic opinion (i.e. claim, belief) is knowledge rather than belief in a natural setting, be it mind or community.

Granted, in respect of the belief-knowledge distinction, I accept that there is a relation between belief and knowledge such that there can be a transition from belief to knowledge. The aforesaid model inspired me to coming up with the OPR-T and CPR-T sub-type and the establishment- or proof-based decision-making procedure that is relies on a contest in mind or community.

4.1.22.3. Robustness and Justified Certainty as a Basis for Knowledge.

On the use of a notion of robustness to define knowledge, I agree. Given the variety of cognitive styles in a community (of a discipline, say) positions are going to be "put to the test" – whatever the dialectical quality of the challenge. This includes challenges that attempt to re-open a debate. However, there has to be a decision-making process in mind/community as to which is the better or best one. There are two ways to go:

(1) A position becomes dominant after it has defeated the alternatives. One that successfully resists challenges to re-open debate and/or challenges after re-opening of debate is robust. Or,
(2) A position becomes dominant when it's clear it can resist challenges that arise after it has defeated the alternative/s.

Either way, we may distinguish robust/non-robust dominance; hence, positions can be robustly or unrobustly dominant. One aspect of dominance is how long a position remains dominant. Clearly, robustness under challenges is an important factor. See page 376 of the thesis where I favorably mention robustness. I shall address this further in future work.

4.1.22.4. Confidence, Uncertainty and Belief.

I'm not entirely clear on your usage of "justified certainty", "uncertain belief", "degree of confidence" etc. to adequately reply. It is reminiscent of Chisholm's various expressions, which he attempts to force-fit into a scale of descriptions. However, you appear to be grappling with similar concepts as Chisholm and

myself. Perhaps you can appreciate my (hyper-)vigilance in defining terms in the light of everyday language use and referring to an authoritative source such as the OED as a measure of proper language use. This attitude, for better or worse, reflects deep concern as expressed by Austin with regard to philosophical activity.

4.1.23. p.344 I really don't like this use of the phrase "Principle of Sufficient Reason" .

Perhaps this needs to be “spelt out” in more detail as I have a tendency on occasion to skip through my reasoning in putting it on paper. I present the principle of sufficient reason (PSR) as a precursor to persuasion-convincing distinction; the OPR-T or, more precisely, the CPR-T; and ultimately my account of knowledge via a belief-knowledge distinction whereby one is a transition to the other. The PSR is usually associated with Leibniz and, according to Blackburn [p.355 2nd ed. 2005], “is sometimes described as the principle that nothing can be so without there being a reason why it is so”. As a consequence, it is associated with Leibniz’s relational theory of space and the notion of the best of all possible worlds.

Schopenhauer [1813] went on to elaborate this principle; and distinguished four applications or specific versions of it. One may be critical of Schopenhauer’s results; however, there is nothing wrong with applying this general abstract principle to concrete contexts and situations. I elected to apply it to opinions, in particular claims (or beliefs) as they occur in the discourse of debate. Taking the simple account of the principle as “nothing happens without a reason”, it remains then to determine various applications. The abstract ontological notion of thing enables us to recognize belief and knowledge as kinds of things. Hence, in this doxastic-epistemic context;

(1) No belief is held without [good or sufficient] reason.
(2) No belief-as-knowledge is held without [good or sufficient] reason.

My account is along this line. Indeed, application (2) is more suitable than (1) but both can be viewed as precursors to my way of thinking about knowledge (via belief) as developed in chapter 5. Given that I skipped over the reasoned details, I have made adjustments within the same allocated space in the thesis. The reads as follows:

..... One of the guiding principles of rationality has to do with the giving of good reasons for what an agent is committed to or believes in. Good reasons are at least logically correct, this is at least what it means to be reasonable. Leibniz takes this further. In a famous passage from *Monadology*, Leibniz [Sect.31-2 1714] states:

> Our reasonings are based on two great principles, that of contradiction, in virtue of which we judge that which involves a *contradiction* to be false, and that which is opposed or contradictory to the false to be true, and that of *sufficient reason*, by virtue of which we consider that we can find no true or existent fact, no true assertion, without there being a sufficient reason why it is thus and not otherwise.

This last principle is the principle of sufficient reason. Simply, nothing happens without a reason. There are different versions of this principle due to Schopenhauer [1813]. As dis/believing is something that happens, we may posit the following:

> Principle of sufficient reason (for belief). An agent is not doxastically committed to or believes (or even knows) p to be true unless there is (good or sufficient) reason to do so.

Clearly, this is an application of Leibniz's principle that is done in the spirit of Schopenhauer. A doxastic-epistemic application, which involves a sufficiency notion of proof, appears in an early theory of knowledge due to Whately [p.165 1857]. In *Elements of Logic*, he discusses belief and knowledge as follows:

> Knowledge implies three things:
> (1) belief;
> (2) of what is true;

> (3) on sufficient grounds.
>
> If anyone, e.g., is in doubt respecting one of Euclid's demonstrations, he cannot be said to know the proposition proved by it; if again, he is fully convinced of anything that is not true, he is mistaken in supposing himself to know it; lastly, if two persons are each fully confident, one that the Moon is inhabited, and that the other that it is not (though one of these opinions must be true), neither of them could properly be said to know the truth, since he cannot have sufficient proof of it.

Whately requires more than mere support or justification. He requires that the support for a position be of “sufficient grounds” in relation to an opposing position and satisfy some requirement of proof. It thus appears that Whately invokes a particular version of the principle of sufficient reason as regards the evidence for a claim. Whately’s notion of proof is like that found in courts of law. Indeed, a legal analogy or jurisprudential metaphor as a guide to understanding critical discussion and debate is recognised and applied by Whately [1846] in *Elements of Rhetoric*. As Ehringer [p.xix 1963] points out, with regard to the concepts of presumption and burden of proof, Whately was “the first to transfer [them] from the law of evidence into the general field of non-legal argumentation”. .....

4.2. Reply to Examiner B

Below are my responses (normal type) to the critical review of Examiner A (bold type) in respect of my PhD thesis. Criticisms are numbered for easy reference. Cited works are listed in a common reference list. The reply is given at the end in this instance.

4.2.1. General Comment

This is an impressive thesis that investigates an interesting topic in a productive and useful way. The candidate's work is convincingly and critically located within in a suitable range of appropriate literature. A suitable conceptual methodology is deployed to investigate the thesis topic. The conclusions are interesting and the case for supporting them is well-argued. The thesis is well

written and relatively free of errors. So congratulations are in order for Mr. Forshaw and those who guided his work.

Comments on specific Doctoral criteria

4.2.2. Evidence of independent and critical thought:

This is a pervasive feature of the thesis. The critical analysis of previous work and the conclusions drawn from the analysis are usually cogent and persuasive.

4.2.3. Methodological expertise:

This thesis shows sophisticated philosophical and conceptual acumen of a high order. I have no doubt that the candidate is ready to carry out valuable research work in this and related fields.

4.2.4. Extent to which the thesis makes a distinct contribution to the knowledge of the subject area:

The thesis impressively builds on and links to work of others. Mostly the critical account of previous work is cogent and overall the thesis represents a contribution to knowledge in its subject area.

4.2.5. Extent to which the thesis makes an original contribution to knowledge of the subject area:

I am not a significant expert on specific details within this field, but the overall quality and scope of the thesis certainly represents an original contribution.

4.2.6. Quality of the literary presentation of the thesis:

As already noted, the thesis is very well-written. It is logically structured and soundly argued.

4.2.7. Worthiness of parts of the thesis for publication in appropriate form:

I expect that several research papers can be extracted from the thesis. It may be suitable for revision as a book.

4.2.8. Minor revisions and additions requested

There are lots of minor typos that require a close edit of the whole thesis.
On p. 21, headings 2 and 3 seem to be in the wrong order. As is, they conflict with the table of contents and the discussion on p. 22.

What follows is my reply:

4.2.1-4.2.7. Content, Method and Organization.

The official thesis is an edited version of the original thesis, which is 50pp longer. A number of sections were removed and a chapter on logic was removed with some sections placed into chapter 4. The inclusion of these removed sections would have addressed some of the inadequacies identified by the examiners, notable those identified by examiners A and C who focused on philosophical aspects of the thesis. I have addressed all their concerns in the “Replies to Examiners”. When taken into account, this suggests that the theoretical framework of the thesis is generally robust in the face of criticisms. This appears to support the general criteria-based assessment presented by examiner B.

4.2.8. Typographical and other Errors.

Minor typos as per your point 8 have been identified by myself and the other examiners, notably examiner C. All identified typos and related errors have been addressed in the final version of the thesis.

4.3. Reply to Examiner C

Below are my responses (normal type) to the critical review of Examiner C (bold) in respect of my PhD thesis. There three parts to the examiners critique. The criticisms and replies are numbered accordingly.

4.3.1. CRITERIA FOR ASSESSMENT:

4.3.1.1. Conducting Research

This thesis shows quite clearly that the candidate can conduct research. The bibliography is extensive, if a little dated, and of very good quality, and the reading of the works cited is standard and appropriate, if sometimes pedantic.

(1) Bibliographic Quality and Quantity.

Are today's efforts really that much of an advance on the past (say, before the 20th century)? Seriously, I have my doubts at this time. I would have liked to look at all sources. In my view, there is much insight to be gained by looking at older works. If we don't bother to learn from history, we are bound to repeat the work. Many of today's text on critical thinking and reasoning, informal reasoning and logic, critical thinking, argumentation etc are poor, shallow, mistaken etc. However, there is a growing number exceptions due to research in the last half of the 20th century. Things are starting to look even better as we move into the 21st century.

(2) Pedantry.

I don't know how to respond to this: either to apologize or defend myself. I took a "back to basics" approach, which at least means being grounded in language use. On this, I echo some of the concerns of Austin [Urmson p.517 v.1 1998], which I outline in point 3.2 of this reply to examiner C.

On the point of pedantry, there are going to be differences of opinion, depending on one's readership. Sparkes [pp.217-18 1991] identifies 2 countervailing positions. He notes:

1. "A pedant", Bertrand Russell once said mischievously, "is a person who prefers his statements to be true."
2. As Aristotle says in , "It is the mark of an educated mind never to expect more precision in the treatment of any subject than the nature of that subject admits" – or, one might add, the circumstances require [*Nicomachean Ethics*, Bk.1 Ch.2].

Clearly, there has to be a fair and reasonable balance. However, I'd rather err on the side of pedantry than anything else like ambiguity, vagueness, lack of clarity, misinterpretation or contention as to where I stand. If, while reading, you are saying "of course" or "that's obvious" etc then that in itself keeps contention to the really important issues.

There are some works missing which could have enhanced the candidates work, but these are only very small in number. They include a small number works setting out formal models of dialogue and works setting out formal accounts of rational belief revision. The absence of these works in the bibliography and citations does not adversely effect the overall passing quality of the thesis.

(3) Missing Works

Generally speaking, there are some areas I decided to gloss over and works I'm aware of that I decided not to include at this time. However, my intention was and still is to review all significant works where practically possible, both historical and modern ones.

(4) Formal Models of Dialogue and Belief Revision.

I shall comment on each in turn. First, consider formal models of dialogue. See section 4.3.4.8 of this reply where I comment on dialogical systems. I identify

four approaches to dialogical systems and show that my approach is based on abstract macro-forms that cover dialogue instances. Granted, a derivation of this structure from a study of dialogical fragments would certainly be relevant; however, this was not presented due to my judgement of space limits and priorities. Consequently, I focus on familiar common argument type to make my point. This doesn't necessarily discount a study of dialogues.

Now consider (Rational) belief revision. Presumably, you are referring to Bayesianism and its cognates. I signal my awareness and concerns at a few places within the thesis. I make a brief account of Bayesianism and the like in section 2.3.3 ("Opinion Change and Revision") on page 134 of the thesis. In this section I give an account of opinion and belief revision in terms of the OPR-T, taking into account object and meta-perspectives of critical discussion or debate. Again, I take up Bayesianism and its cognates in section 5.3.3. ("Knowledge: Belief with Proof") on pages 363-364 of the thesis.

A similar criticism was made by examiner A. In response, I strongly take issue with Bayesianism at point 4.1.4 in the Reply to Examiner A above. In retrospect, I could have given a treatment of each as a starting-point for my own ideas, especially Bayesian epistemologies; however, if I did to so then I would need to cutback the thesis in other areas. I had already removed paradoxes of reason/ing, the story model of multi-propositional claims, rhetorical power, dialogues involving the self etc

4.3.1.2. Independent and Critical Thought

The candidate is more than capable of independent critical thought and the synthesis of a variety of standpoints. Indeed, this is one of the explicit aims of the work and has been achieved.

At times it is not clear that the candidate has been critical enough of general notions underlying his thesis, but shows critical thought within the ambit of the thesis itself.

(1) Extent of Critical Thought.

I had to remove sections and cut down sections – and this may have impacted on its philosophically critical character and impact. It was in excess by 50pp and involved associated topics across most chapters. Furthermore, due to the nature of the problem and my proposed solution, there was a need to strike a balance between scope and depth.

4.3.1.3. Understanding the work in relation to others

The candidate shows a good understanding of his work in relation to a wide range of cited works. He relates his work to the writings of a series of philosophers from Plato and Aristotle to the modem European philosophers, and also to some work in cognitive science and communication.

(1) History of Ideas and Modern Thought

I think it is crucial that the multi–disciplinary consortium associated with the study of debate and argumentation take stock of its intellectual heritage. This is what Aristotle did – and I think its philosophically right for us to do so even today. Philosophers ought to be doing specialist and generalist work within a wide-ranging historical-of-ideas framework. At the very least, we would have properly learnt from the past and therefore not end up re-doing what had already been done.

4.3.2. GENERAL COMMENTS:

Despite the passing quality of the thesis there are some matters in the thesis worthy of comment in this report.

4.3.2.1. First, the opening discussion of the knowledge-persuasion gap looks more like discussion of a belief-persuasion gap. Austin's distinction

between knowledge and belief in terms of the appropriateness of questions would have been very useful here.

(1) Belief and the Knowledge-Persuasion Gap

It is worth pointing out a wider appreciation of the problem of (the nature of) knowledge rather than JTB and its cognates even though it is the current general orthodoxy. Even if I did discuss Austin's belief-knowledge distinction – and I will in the future – there is a need for caution. See my response to these issues below.

In response to a belief claim one asks for reasons, but in response to a knowledge claim one asks how the agent knows. If the agent can respond with an account of how it knows, and the method of gaining or establishing the knowledge is applicable to the questioner, then knowledge is either transmitted to the questioner or the claim can be called into question or viewed as problematic. But with the giving of reasons the agent claiming to believe has to embark upon a campaign of either persuasion or declaration, even if it's a simple campaign of unadorned reason giving, in order to respond appropriately to the question.

(2) Austin's Belief-Knowledge Distinction.

Apparently, you are being guided by (Austin's account and/or your perception of) ordinary language use. I concur with this focus. However, one has to read Austin's commentary with caution. Austin shows caution in his choice of words and expressions when giving a linguistic account of the belief-knowledge distinction. Indeed, at one point Austin [1946; p.46 1961] says ".....there are bound to be many kinds of case that I shall not cover at all, or not in detail".

Thus, I have doubts about the scope of Austin's account. It might well be a partial explanation of the gamut of English expressions relating to the belief-

knowledge distinction. For instance, there might well be not that much of a difference between expressions associated with belief compared with knowledge. Consider these parallel expressions involving “to believe (belief) and “to know” (knowledge). Here, X=”God exists” or something else.

A. How do you believe X?
B. How do you know X?

Expression A seems OK but B seems uncommon and a bit quirky, though it does make sense. With a change to expression we can have:

C. How did you come to [modifier] believe X?
D. How did you come to know X?

The modifier can be “begin to”, “weakly”, “moderately” or “strongly”. There is a suggestion of change of agent state for both. Based on our intuitions of language use, we might be inclined to suggest there is something special in coming to know as against coming to believe [modifier].

Consider these:

E. Why do you believe X?
F. Why do you know X?

Expression E seems to require some reason ground

G. What reason/s can you give for [modifier] believing X?
H. What reason/s can you give for knowing X?

These expressions seem linguistically acceptable. Both are about reason-giving; however, there is intuitively something special about the reasons required for knowing rather than believing [modifier].

Still, it is worth noting that, according to Hetherington's epistemical gradualism, there is not much difference and that we can speak of "[modifier] knowing" as well. This raises another point. It seems imprudent to critically examine language use, especially in respect of the use of "belief" and "knowledge" and their variants, with the presumption that it is underwritten by the truth about the concepts of belief and knowledge (say). Generally, language use reflects an underlying theory rather than the other way; and that they could be wrong. Letting the experimental combinations that arise in a living language dictate our thoughts about things is a risky business and requires caution and healthy scepticism.

However, Austin's account of the belief-knowledge distinction might well be so. If it is true, then I don't think it is an adequate basis for understanding this distinction. It merely highlights the following:

(1) It linguistically signals that there is a belief-knowledge distinction.
(2) A knowledge-claim has more gravitas (greater import) than a belief-claim, such that we have to respond one way rather than another.
(3) It doesn't give a conceptual basis for (1) outside of (2).

What it tacitly suggests is that, given the gravitas of a knowledge-claim p over a belief-claim p, there is at least some connectedness such that a comparison can be made. The switch from believing to knowing is such that it requires something more in response to particular questions you highlight. The JTB model and even anti-JTB models e.g. Chisholm's epistemical cognitivism, Hetherington's epistemical gradualism etc. are attempts to give an account of this gravitas or higher value. Furthermore, Austin's [pp.46, 53-54 1961] language use in respect of the belief-knowledge distinction occasionally coheres with my conceptual scheme in his use of "evidence", "proof" and "support" etc. This suggests underlying conceptual commitments that underwrite his language use and linguistic analysis.

(3) Campaigns of Persuasion

Both engage in a campaign of persuasion when either the knowledge-claim or belief-claim is under attack or challenge. If they take issue, both are inclined to respond using persuasion in albeit different ways. Those ways may well be the responses that you describe above.

The thesis is clearly addressed to claims of belief, and to the question of how an agent might persuade someone of the truth of a certain belief. The fifth chapter on knowledge can be seen as substantiating the view that the real target of the thesis is not the knowledge persuasion gap but the belief persuasion gap. Knowledge is presented in Chapter 5 as a kind of belief. This is, of course, in line with the dominant orthodoxy in analytic philosophy that knowledge is justified true belief. More of this below.

(4) Belief or Knowledge as the Target.

The target *is* the persuasion-knowledge gap: knowledge is arrived at via claim (that marks the intrinsic presence of belief, usually) via opinion. Indeed, knowledge is taken to be a kind of belief.

What you say is misleading. In particular, you say:

> .....the real target of the thesis is not the knowledge-persuasion gap but the belief-persuasion gap. Knowledge is presented.....as a kind of belief.

Within the conceptual framework of my thesis the target is *ultimately* knowledge. Granted, it is via belief, given the prominence of the JTB model (or one of its derivatives) is our best “measure” of what knowledge is at this time. Given this, the approach *ultimately* bridges the knowledge-persuasion gap. However, I must emphasize that my proposal is the open contested certified true belief (CCTB) model that rests on contest (conflict) in mind or community; and certification that covers both linguistic and non-linguistic ways from belief to knowledge. Where a linguistic requirement has to be met e.g. public scrutiny via

a shared language (technical or otherwise) and a rational requirement that favors argument and evidence; then notions of support (support strength), case or body of evidence (weight) and proof (weight) are the basis for certifying some claim (belief) as knowledge.

Overall, the case presented in the thesis depends in a crucial way on the justified true belief account of knowledge. So, I must declare that I think that the justified true belief account of knowledge is fatally flawed. But, the candidate's thesis presents an interesting case based on this account of knowledge.

(5) The JTB Model.

The thesis targets JTB and its cognates because it is a prominent view in epistemology – our “measure” of what knowledge is at this time – and because a jurisprudential metaphor tends to favor grades of belief, strength of support (e.g. justification, weight of evidence etc) and some standard of epistemic achievement (e.g. standard of proof). I make the point in my thesis that justification is the opposite of refutation, both of which just some final argumentative outcome: I, along with Hetherington prefer a general notion of support, which is the basis of my notion of certification. Though aware of JTB, I had reserved my judgement while doing the thesis. While exploring scale-based notions relating to knowledge, I seriously entertained proposals by Chisholm and Hetherington, which has a precursor in the work of Boole and taken up by Lewis after reading an early paper by Hetherington. However, my proposal, set in a dialectical-rhetorical framework, is the open CCTB model, which I discuss above.

(6) The JTB Model is Fatally Flawed (?)

Presumably, your position on the nature of knowledge is based on the Austin belief-knowledge distinction (?). In respect of this distinction. I raised concerns in one of my replies above. Austin’s account does not necessarily discount the

JTB models or even some anti-JTB models. The JTB model is the focus of debate in epistemology and it rests on a belief-knowledge distinction where knowledge is a special kind of belief, a view which you refer to as the “dominant orthodoxy”. Though I target the JTB model, I end up with the open contested certified true belief (CCTB) model that does, like the JTB model, endorse the view that knowledge is a special kind of belief. Hence, I too view the JTB model as flawed in the sense that it is

(1) Inadequate as a general theory.
(2) Inadequate as a complete theory.

In respect of point (1), it cannot accommodate other species e.g. dogs, cats, dolphins etc. that are without a well-developed language for cognition and communication. Success in their activities suggest that they do have knowledge. And, in respect of point (2), it lacks other conditions such as defeasibility, relevant alternatives, proof etc.

4.3.2.2. Second, the resort to numerical values, especially in Chapter 2 is of considerable interest. But, it is just not clear that the numerical evaluation of persuasion could ever be applied. There are some suggestions about this in Chapter 4, but they do seem to be quite impractical. The material does little more than display the candidate's theoretical creativity, and command of statistics and sigmoid function literature. But the assignment of numbers does raise a series of questions about whether the understanding of persuasion is to be agent oriented or proposition oriented.

(1) Numerical Values for Persuasion & their Impracticality.

I note that a number of authors like Bentham, Keynes and Ramsey have discussed issues relating to measurement and calibration. I speculate about ways by which we could measure them – but that’s all they are. Still, it does give credence to the idea that there are scale analogues “in the head”. Cam, a

colleague in the school at UNSW, recalls Armstrong saying he takes a problem so far and then leaves the rest for the scientists to sort out. He has a point. It becomes a matter for the scientists to come up with the appropriate mechanics of measurement and experimentation.

I envisage the possibility of setting up toy debates (that is, simplistic dialogues of contention) that exemplify the numerical mechanics of persuasion.

(2) Theoretical Basis of the OPR-T.

The proposal of the opinion-persuasion relation with thresholds (OPR-T) and the important claim-persuasion relation with thresholds (CPR-T) are not just a display of applied mathematical cleverness. I give reasons in support of the proposal. I suspect that the evolution of brain-based neural nets (not merely the simplistic artificial neural nets of today's research) has favored them due to their "pliability" to approximate well-enough other functions within the biophysical constraints of these neural nets in relation to the circumstances in which opinions are formed and shaped. For example, an S-function can come close well-enough to a linear function. Though other functions are unlikely to suit the OPR-T of agents, the S-function can come close to them. In retrospect, I suppose I should have demonstrated this in a figure.

(3) Persuasion: Agent- vs Proposition-oriented.

The concern you raise is very interesting and worth serious consideration. I refer you to figures 2.1 and 2.3 of the thesis on pages 91 and 109 respectively as they are relevant to my response. Persuasion is agent- and appeal-oriented both indicated by language use. For instance, agents (persons) persuade as do appeals arguments (used by them or someone else). Based on a content-act (content-process) conception, the mind-brains of agents harbor calculus-like adaptive mechanisms for persuading and for being persuaded. As an expedient aside, they may be likened to Dawkin's memes. These persuaders (say) are owned by the agents who by virtue of this is deemed also to be a persuader.

That's why we are linguistically inclined to say that we are persuaded by a person or the appeal/argument used by them or someone else.

Similarly and correspondingly (as per the figures previously mentioned), confidence applies to agents and propositions, in a manner of speaking. More precisely, confidence applies to agents or their adaptive mechanisms for propositions; such mechanisms include valuation and preferences, in short, attitude formation etc. As the mechanism is owned by the agent than its confidence is the agent's confidence. In the face-to-face world we are naturally inclined to attribute it to the agent in the first instance. So where does un/certainty fit in? Agents can have high/low confidence about lots of things. Where information – more precisely propositions or theories – is concerned, we are inclined to speak of feeling relatively un/certain. This is our information confidence. In my account of the OPR-T, I reserve "confidence" for the agent and "un/certainty" for the corresponding confidence of the mechanism. As I start, there is a 1-1 correspondence between the two. Furthermore, there can be subjective and objective variants as per the agent's stance on rationality.

Propositions and their collection into premise-conclusion structures are given objective persuasion values. This shifts the analysis from pragmatics to the semantics. This is the general approach in classical logic and in the work of Toulmin and his followers. They protest that they are not giving analyses of premise-conclusion structures, but they collect propositions into structures and suggest ways to evaluate those structures. The candidate cites Toulmin with approval. The candidate is attempting, as I see it, to give the semantics of OPR-T. This move to semantics is certainly a courageous move on the candidate's behalf. But one might have assumed that a thesis about rhetoric and persuasion would remain in the area of pragmatic analysis, either formal or informal.

(4) Semantic-Pragmatic Distinction.

Firstly, I would like to consider the semantics vs pragmatic distinction. This seems to be based on internalist vs externalist outlooks on language use, specifically dialogue or conversation. You either focus on the externals of dialogue alone or you focus on both. This is what I think you mean when you make the aforesaid distinction.

Your interest, which appears to inform your criticism, is reminiscent of the following distinction made in the 20th century. They are:

(I) Black box vs white box models.
(ii) The cognitive-behavior debate.
(iii) The sociology without psychology movement.

Though not necessarily finding them in error, discourses associated with these approaches highlight the limits of black box, behaviourist and externalist modeling. For particular note is Chomsky's arguments against Skinnerian behaviorism in psychology, in particular the poverty of the stimulus argument relating to language. Analogous criticisms can be mounted against those who take an externalist or "pragmatic" approach to dialogues.

Granted, dealing with cognitive architecture is not easy. What we need to do is develop modeling and representation techniques that enables us to tame the complexities involved in such architectures.

(5) Analysis based on Premise-Conclusion Structures.

I give an account of argument based on logic. I'm emphasizing arguments (and strategic aggregates of them) rather than appeals generally on this occasion because I have to end with a rational account of knowledge as per the JTB orthodoxy. In keeping with dialectics and rhetoric, the rational account is the open CCTB model (open contested certified true belief model). It is more general than JTB; however, a rational account has to involve a rational

certification based on arguments in discourse and a shared public language to express them.

I would have thought that persuasion is something like a four place relation between two agents and a proposition or action and a means:- X persuades Y that p (or to do 0) by means of <p (where <p is some action of X such as speaking, weeping, laughing, making a joke, giving a sign, giving a gift, making a threat, etc.). It might be responded that the semantics of OPR-T is an account of agent Y's propensity to be persuaded. But it is actually presented in this thesis in terms of some sort of objective quality of propositions and/or arguments rather than of the quality and/or effectiveness of X's actions t should be noted that questions and challenges are not considered.

(6) Persuasion as an n-place Relation.

This is an interesting point. Firstly, my use of “degrees of persuasion” is an manner of speaking, a shorthand if you like, such as the use of “degree of belief” is not meant to be taken strictly.

I emphasize a content-act conception of the mind in the sense that they form calculus (algebraic-like structures); and therefore they form content-act systems. Hence, strictly speaking, its these systems that have the features you refer to.

In defining persuasion by the 4-place relation you propose, should it not include “persuades”? This is like defining X and using X in your definition. Such is circular and not informative. If this is taken into account by the use of some other term besides “persuades”, then the proposal is still interesting. Language use shows we are inclined to say things like the following:

(I) X is persuaded by Y that p is true.

(ii) X was persuaded by X’s case that p is true.

(iii) X presented a persuasive case.

(iv) X is very persuasive.

As far as I can make out, these are legitimate examples of language use relating to the various forms of “persuasion”. Arguably, on the surface, they are two-place relations. For instance, example (I) can be re-expressed as:

X is persuaded-that-p-is-true by Y.

This is a kind of persuasion, the -that-p-is-true kind of persuasion. However, this relationship may be decomposed (or analyzed or “unpacked”) to reveal a deeper structure.

(7) Semantics of the OPR-T.

I refer you to my response 4.3.2.2.(3) relating to whether or not persuasion is agent- or proposition-oriented. My response rests on a content-act conception of the functions of the mind-brain and the agent who possesses such these functions.

(8) Questions and Challenges

Depending on the meaning of “challenge”, I’d be inclined to treat the term as a synonym for opposing argument, objection, rebuttal etc. These are covered by my so-called universal argumentation scheme (UAS). However, I’m open to other possibilities. As for questions, I point out that issues, which are the trigger for disagreement in debate, are often expressed as questions. Granted, they can arise in a debate, in which case if there is disagreement we may have the trigger or “switch” for a nested debate on another issue.

I am not convinced that the candidate's move to semantics is the correct approach, but it is very interesting and stimulating to read the candidate's wide ranging case for this approach.

(9) Semantics and Cognitive Architectures

When I discuss appeals in the chapter on persuasion, I make a distinction between the intrinsic and extrinsic sides of opinions and persuasion. The extrinsic side (behavior) is gives us a description of dialogue involving persuasion (say). An explanation for this ultimately has to be found on the intrinsic side (mind). Hence, the need to consider aspects of the cognitive architecture of mind. I briefly raised the philosophical issues in point 4.3.2.2.(4) above.

4.3.2.3. Third, in Chapter 3, a key chapter in the thesis, there is considerable favour shown to the jurisprudential model as a basis for understanding the persuading and convincing of a person of some proposition or course of action. It is also seen as a model for "good" persuasion. This emphasis is problematic for several reasons. The candidate frowns upon the notion of persuading simply for the purpose of either winning or indulging in persuasion for its own sake. But, especially under the adverserial model there is a substantial critical literature about the fact that winning is the main aim, and that the revelation of truth is a fortuitous outcome, though highly desirable, but definitely not the main aim. This is in substantial contrast with the inquisitorial model where the revelation of truth is the main aim. The candidate dismisses the contrast with but one sentence and claims that the models are essentially the same. If the adverserial process is a legitimate instance of an exemplar of good persuasion, then it is either a counter-example or a case where a good exemplar can be distorted. But if the jurisprudential model can have bad instantiations, then it is not the general exemplar of good persuasion.

(1) JM as a Basis for Persuasion and Convincing.

The jurisprudential model (JM) – the activities of courts of law as a guiding paradigm – is used as a source of concepts and relationships for understanding persuasion and convincing in debate. In this sense it can be said that I favor it

over any other enabling model. This is not to suggest that debates ought to be like courts of law. When we attain a robust multi-disciplinary theoretical framework for critical discussion or debate in discourse, then courts of law will be a proper sub-type.

(2) Winning and Winning for Its own Sake.

I don't dismiss the possibility that this occurs' however, whether or not it's a good thing is another matter. Winning for its own sake may cause of agents to engage in unethical, corrupt activities to improve the chances of winning for its own sake.

We need to distinguish "winning for its own sake" and "winning by achieving some goal" like getting one's client off or "truth and justice". Clearly, "winning for its own sake" can be a goal. I accept "winning for its own sake" as a possible fact of some agents engaged in a dispute or debate. It might be a collateral effect of "winning for its own sake" that one or the other goals is achieved.

(3) Winning as the Aim in Adversarial Courts of Law and Justice

Here, I focus on this comment: "....there is a substantial critical literature about the fact that winning is the main aim, and that the revelation of truth is a fortuitous outcome, though highly desirable, but definitely not the main aim".

The fact that there is "substantial critical literature" on this matter is indicative that the teleology of courts of law is not full understood and that in the process of understanding it there are differences of opinion and therefore contention.

Let me say outright that, of course, winning is the main aim! Indeed, my thesis is about there being a dominant (i.e. winning, victorious etc.) position in a debate according to some standard of establishment, proof – or dominance, if you like. In short, a "winning" condition.

Having said this, I think we have to recognize that there are a number of roles and therefore interests at work in a court of law. What follows is reasonable and plausible outline of the roles engaged in by participants. They are:

(1) Judge. An agent or panel who adjudicates the actions of participants with an interest in ensuring the court operates according to law.
(2) Defense. Argues the case for a defendant with the interest of obtaining an innocent verdict or a minimal penalty if found guilty.
(3) Prosecution. Argues the case for the people with an interest in obtaining a guilty verdict with a maximal penalty or a guilty verdict for a lesser crime.
(4) Enabling agents. They produce a body of evidence this is usually available to (2) and (3) above.
(5) Jury. Observes, records (gathers information on) and evaluates both sides of the argument and the proceedings (i.e. the debate); and decides what side has satisfied the standard of proof i.e. shown what is the truth of the situation with an interest in justice.
(6) Audience. Witnesses the proceedings with an interest in justice.

All this has to be done according to law. However, there is another interest. We all have an interest in a system of law working well, especially with in respect to the self or others important to us. This requirement of working well is best captured by the notion of justice. The system must be just and seen to be just in its proceedings. If the laws of court proceedings (including the rules of evidence) are tuned appropriately then justice is done. How to achieve this is an ongoing concern.

Courts of law are not infallible systems, simply because the participants are finite agents; that is, they are not god-like creatures and are therefore prone to error for lots of reasons. Given this, we want the rules and regulations to be “tuned” for justice. What then is justice? Here are some contributing factors:

(1) Truth. We want the truth of the situation.

(2) Appropriate Penalty for the guilty. We want a penalty that is commensurate with the crime and in keep with the standards of a reasonable person. Hence, it may be necessary to take into account mitigating and aggravating factors relating to the situation at issue.

(3) Protection for the innocent. We don't want an innocent person found guilty due to mistake, incompetence or corruption.

Most importantly is the truth so that other factors may be done properly. Over all, I think that at the end of the day we all have an expectation justice.

Of course, there are conflicts of interest. If we have been offended we want the offender to "get what's coming to them". If we offended someone we want to "get off" and not be penalized or get a minimal penalty. However, when all interests are taken into account, we want at least justice for the self and others. Central to this is a court system that gets at the truth. Our Western adversarial systems does well, having appeal mechanisms to allow the opportunity for new evidence and the consequences of forensic progress to be taken into account. They are not perfect but they are the best we have and they are open to improvement. Hence, they can be a good source of ideas for debate generally and inquiry-based debates in particular.

(4) Adversarial and/or Inquisitorial (Sub-)models.

I recognize that there are adversarial and inquisitorial versions of the jurisprudential model (JM). However, as indicated in my thesis, I don't think it is a big deal. Firstly, a JM is merely a guiding paradigm for understanding critical discussion and debate; that is, it is used as a source of ideas and relationships, essentially fundamental ones. Secondly, there are equivalences between the model that makes the distinction irrelevant at a higher level of abstraction. In an inquisitorial court, there may be one inquisitor or a panel of them. The defendant before the inquisitor may or may no have legal representation.

Compared to the adversarial court of law, I make the point that the inquisitor takes on analogous roles that occur in an adversarial court. In a sense, the inquisitor is judge, jury and, if not executor, it is defense and prosecutor. Rather than the roles being enacted in community, they are enacted in a group of minds (group-think, if you like). The functions of the mind are analogous to the roles played in community. Hence, at some abstract level of functionality, the two versions of JM are equivalent. Granted also, there may be advantages and disadvantages in having separate minds carry out the functions; then again, a panel of inquisitors may minimize some disadvantages.

(5) JM as an Exemplar of Good Debate and/or Persuasion.

Firstly, consider the jurisprudential model (JM) as an exemplar of good debate. Here, I refer to the adversarial (sub-) model. JM is used as a guiding paradigm for understanding critical discussion or debate. This does not imply that debates have to be conducted as in courts-of-law. As the JM suggests, courts-of-law have the “ingredients” for good debate, especially productive as against unproductive ones. The point is, if agents are properly organized according to the right code of conduct (i.e. rules and regulations) debates can achieve desirable outcomes, including inquiry into the truth of the matter.

Now consider the JM as an exemplar of good persuasion. Here, I focus on this comment: If the adversarial process is a legitimate instance of an exemplar of good persuasion, then it is either a counter-example or a case where a good exemplar can be distorted. But if the jurisprudential model can have bad instantiations, then it is not the general exemplar of good persuasion.

A JM is based on a jurisprudential metaphor, which is to say that in an abstract sense they have the “ingredients” for an abstract model of debates, and even for what constitutes good debate, which includes good persuasion etc.

Clearly, there is the is-ought (or fact-value) distinction to deal with. These two aspects can be separated.. Yes, a jurisprudential metaphor is my guide as a

matter of fact. However, as I emphasize, I'm only interested in key abstract features. It reflects problem-solving by dispute, taking into account the fallibility and resource limits of finite agency. As a matter of value, I think that, again in abstraction, the courts-of-law suggest some good general rules for a code of conduct for dispute and debate.

Over all, its not a full abstraction but a partial judicious one. Ideally, in doing so, one would want to only abstract those features and relationships that can ultimately "encapsulate" the key facts of debates and highlight the key good values for debate. Whoever attempts this can only do so as best they can, given that the fallibility of finite agency. I accept this and do the best I can.

It might be the case that the jurisprudential model carries weight because it is already quite formal, and it is therefore easy to see in its operation, adversarial or inquisitorial, the various features that are important for persuasion. This formality and institutional charcter of the law which motivated the Dutch dialogicians to consider formal systems for interactive reasoning.

(6) JM and the Salient Features of Debate

I agree, along with Aristotle, Perelman, Toulmin, Dutch dialogicians etc. who see it in the way you describe. However, I make the point that I'm only interested in the jurisprudential model (JM), specifically the ideal adversarial version; that is, I'm interested in the salient features in abstraction that gives us the central concepts and expressions for developing a theoretical framework for disputes and debates. Simply stated, I utilize it as resource of concepts and conceptual schema. In doing so, it has to be recognized that values play a part

As to the formality of the JM: what do you mean by "formal" here? You might mean one of the following:

(1) JM is formal in the sense that it is about systems of agents who are regimented by a (strict) code of conduct.
(2) JM is formal in the sense that it is described technically or mathematically with rigor.
(3) Both (1) and (2).

I have no trouble with any of these interpretations. Both bode well for developing a robust theoretical framework for critical discussion or debate. Indeed, as you suggest, the JM is used as a means of "getting at" what you say as "the various features that are important for persuasion" and debate generally.

It is also interesting that the candidate does not seem to be aware of dialogue game systems and dialogue logics other than the game theory of von Neumann and others. Despite some reference to the work of the Dutch dialogicians, their formal systems are not discussed at all. The candidate points out that there are real problems with game theory. But dialogical systems go far beyond game theory, and deal with information exchange, discussion, debate, negotiation, inquiry, abuse, and command and/or instructional dialogue. In all of these there are normative standards which encompass making statements, asking questions, answering questions, issuing commands, making promises, and a variety of other activities. The normative standards are just as much an expression of Reason as any other standards. Dialogue logic also has evaluative standards for winning, loosing, coming to a stand off, and such.

(7) Dialogue Games and Dialogue Logic.

I make the point that I wish to make a contribution to a game theory of dialogues, specifically those relating to debate, by critically developing a general view based on the jurisprudential model and the OPR-T that is inspired by this model. Indeed, I discuss establishment- and proof-based decision-making and game-theoretic work on voting that underwrites courts-of-law and even disciplines like mathematics and the sciences.

(8) Game Theory and Decision-making.

I agree that dialogue systems “go beyond” classical game theory only in the sense that they are more sophisticated forms. For example, they are at least multi-agent and multi-stage games that include some code of conduct. However, I think it is reasonable and plausible to say that the crux of game theory is decision-making. As I point out, in section 1.3 on page 69 of the thesis where I make reference to *Decision by Debate* by Brockriede and Ehninger [1960a,b], debates can be viewed as dialogical decision-making systems.

(9) Reason and Norms (Normative Standards)

You say; “normative standards are just as much an expression of Reason as any other standard”. I agree that there can be normative standards that rest on Reason; however, due to my intellect-Reason distinction, I don’t think that the presence of a normative standard is necessarily determined by Reason. Beehive colonies exhibit normative standards of behavior; however, it’s origin is not Reason but evolution. The same can be said of a number of past so-called civilized societies. Often they are the work of intellect at the service of the passions.

There is also no discussion of what some argumentation theorists have called "witnessing" (such as evangelical sermons and political speeches) and its role in persuasion. Witnessing is a very common activity in modem life and can be seen daily on television. It is often misunderstood or dismissed.

(10) Witnessing

I have addressed interviews and speeches (including sermons); however, this may have been one of the sections (or sub-sections) removed. Such linguistic or signific complexes are aspects of discourse. There are aspects of persuasion here. When we analyze them, they tend to show debate in an overt or covert

role-playing, even a one-sided kind. Hence, why I speak of dispute or debate in mind or community.

Sermons, witnessing and speeches. I cover such things, if not in this thesis, in removed sections. Indeed, I mention *Language as Sermonic* by Weaver [1970]. I mainly focus on speeches but *prima facie* I think it can include those others. These one-sided complexes can be viewed as having appeals and arguments as components in some kind of one-sided argumentation stream. In the greater discourse of mind or community they are a component, albeit a complex one, in a debate. As they are presented or published in a discourse involving others in some way, they are a gross act of persuasion, rational or otherwise. In them, components may mimic what happens in conversation proper or there are analogues.

4.3.2.4. Fourth, there is a very narrow conception of argument in the thesis. This becomes very clear in Chapter 4. On page 214 the candidate quotes very selectively from the OED and leaves out the material about verbal disputes, and interactive reasoning and debate. The focus is mainly on premise-conclusion argumentation in the style of the Demonstrative Theory of argumentation analysis. The Rhetorical and Dialogical Theories of Argumentation Analysis seem to be either unknown or dismissed out of hand. The discussion of dialectic and dialogue comes to nothing more than the demonstrative orthodoxy. In fact, the dialogical nature of argumentation is stipulated out of contention on pages 216 and 217. The stipulation is quite explicit in (5) at the bottom of page 216. The discussion of Reason is applied in such a way that it has little to say about questions and answers, commands, explanations, and epithetical argument. Dialogue analysis and dialogue logic is filled with examples where questions have acted with persuasive force by making a proponent or participant reconsider a point at issue in the light of an illuminating question. The narrowing stipulation about argumentation shows a major bias away from one of the important activities of dialogue, question and

answer, and a narrow focus on premise-conclusion argument. But, that is the dominant orthodoxy.

(1) The Concept of Argument.

Semantic flexibility of everyday language use leads to the various uses of "argument". At the very least, I recognize to central uses of "argument". They are:

(1) Logical (narrow) notion of argument. It is a line of reasoning (with a premise-conclusion structure) presented in discourse (of mind or community).
(2) Dialectical (wide) notion of argument. It is a contentious discussion relating to some issue of common interest to those agents involved.

Clearly, (1) can occur in the context of (2).

Yes, I use a narrow notion of argument but I recognize that they are pieces of reasoning in discourse having logical structure and used for a persuasive purpose. How they are deployed as a whole or parts in conversation, done alone or with someone, is ok but irrelevant and we can abstract away from this.

Consider how Restall [p.11 2006] deals with the problem of (the meaning of) "argument", which I rather like. He states:

> In everyday situations, arguments are dialogues between people. In logic, we do not study all of the features of these dialogues. We concentrate on the propositions people express when they give reasons for things. For us, an argument is a list of propositions, called the premises, followed by a word such as 'therefore', or 'so', and then another proposition, called the conclusion. This is best illustrated by an example:
>
> If everything is determined, people are not free.Premise.
> People are free. Premise.

So not everything is determined. Conclusion.

> We will examine good arguments (like this one), in order to give an account of why they are good.
>
> One important way for an argument to be good is for the premises to guarantee the conclusion. That is, if the premises are true then the conclusion has to be true. Instead of simply calling arguments like this 'good' (which is not particularly helpful, as there are other ways arguments can be good), we will call them valid. .....

Restall recognizes that the reason(ing) has its place in dialogue of an argument. And, this reason/ing is to be called "argument" as well. This just about makes issues of the meaning of "argument" void. This is well-and-good and I don't have a problem with this so long as the context takes it clear what "argument" is being used. All I have done is express a preference for a syntactic-semantic argument-debate distinction.

(2) Premise-conclusion Argumentation & the Demonstration Model

Granted, there is more to persuasion than arguments, or appeals for that matter; and we may discover this through a study of language use. No doubt this carries over to critical discussion or debate involving rational agents; however, strictly speaking, where the contesting of positions is concerned, it is arguments (support strength), the body of evidence, case (net support strength or weight) and establishment (or proof where claims are concerned) that really count. They give direction and ultimately resolution to the debate. Fundamental to my approach is the recognition of argument types and cogency as a covering concept to judge the worth of arguments and case. The well-developed study of deductive arguments is taken as a guiding paradigm for arguments generally. Though I state that I uphold deductivism with regard to the problems of inference at this time i.e. the problem of implication, the problem of induction, paradoxes of reason etc., it is irrelevant as the cogency notion developed here aims to cover all argument types.

(3) Rhetorical and Dialogical Nature of Argumentation.

The rhetorical and dialogical theories of argumentation are there. The universal argumentation scheme (UAS) encapsulates sufficiently of what is important to rational argumentation for my purposes. It is a focus on a rational rhetoric that is underwritten by a rational form of the OPR-T or CPR-T. In retrospect, if I had the space or shifted my emphasis I would have given a dialogical bases from which to derive the UAS. Further to this reply, I refer you to point 4.3.2.4.(8) below.

(4) Q&A, Persuasive Force and Nested Debates.

I touched upon this at point 4.3.2.2.(8). We may view this on both a macro- and micro-level of discourse, a distinction used, based on work of cited others, that applies with respect to Q&A. First, the macro-level of discourse. In critically discussing issues and debate, I examine the view that debate is shared problem-solving. Following Meyer, I elaborate this view as problem-solving by debate: an issue-as problem can be framed as a question, contention is problem-solving and the result is a dominant opinion that is the solution that can be framed as an answer. Second, the micro-level of discourse involves Q&A in the conversation (or dialogue). Q&A may involve getting information. A question may be used as a rhetorical device; however, this may have an equivalent form that has no Q-form.

In effect, the candidate explicitly narrows the scope of the thesis to cover just a sectional part of the general topic of persuasion. Within that sectional area, the candidate has many interesting proposals, but it needs to be pointed out that the focus is quite narrow. Most of Chapter 4 is a discussion in very traditional terms of premise-conclusion argumentation and its problematics, and even contains a proposal for a formal multi-valued premise-conclusion logic.

(5) Narrow/Wide Notions of Persuasion

The narrow focus is to have a rational persuasion basis as I hone in on JTB, a fallible objective rational belief-oriented account of knowledge. However, I use "certification" to accommodate other bases of influence and persuasion. The CPR-T can be generalized to accommodate theses other bases for knowledge. However, I make the point that rational agents make it an objective (or objectifying) requirement that it be framed in a common observable language, much the same way as maths has language (even diagrammatic) requirements.

Narrowing the focus is just that and nothing more is implied by that practical move. Doing this doesn't necessarily dismiss other features of dialogue in conversation, discussion or debate. Fundamentally, what counts in rational debate – where the focus is on issue and positions – are arguments (support strengths) and the body of evidence or case (weights). The narrowing focus is necessary to hone in on the belief-knowledge distinction of fallible objective rational epistemologies associated with the JTB model and its cognates.

(6) Premise-Conclusion Argumentation & its Problematics

There is original work here. Apart from a semi-formal sketch of a multi-valued opinion logic (not necessarily confined to truth-values) and a philosophy on the nature of logic (albeit briefly presented at this time) there is a diagrammatic appreciation of support notions in relation to familiar argument forms, the recognition of multiple uncertainty outcomes and a notion of cogency as a measure of rational persuasive support strengths.

At the same time, there are hints at something more dynamic. This can be seen especially on page 249 in the universal argumentation. scheme (UAS). This sort of mapped process is dealt with quite explicitly in dialogue logics, but in greater depth. (I might just note that it is strange that a candidate from the University of New South Wales, the University of Charles Hamblin, should show such little awareness of or willingness to treat formal dialogue systems.)

(7) Dynamical Approach, Dialogue Logics and the UAS

I've seen some of those dialogical logics and consider them interesting, highly speculative, occasionally dubious, showing conceptual preferences in language use etc., irrespective of the logico-mathematical dexterity of some of its authors. To my mind, its early days in this rather complex area. I opted for a general, somewhat familiar account that merely highlights my theoretical proposals so I can keep on moving toward making belief/knowledge (JTB in some sense) emerge from persuasion, with a bias to rational forms as they are prominent in Western (analytic) philosophy.

To make my point, I didn't think it necessary to go into the depth of some work in dialogue logics; and therefore settle on the abstract UAS, which technically is the universal appeal scheme, though I used argument in place of appeal as I require this to arrive at an objective rational account of the belief-knowledge distinction. Still, there is indeed a dynamic story to be told. I suggest this by describing the UAS as a space, albeit most likely not the complete space in which conversational patterns follow a trajectory. This is a state-space approach for patterns of dialogical forms.

Furthermore, my intention is not to discount micro-analysis of dialogues in debate, it is to undertake an abstract macro-analysis – to abstract away from but dependent on the concrete features of dialogues. Indeed, my approach is echoed by the recent book on Argumentation by Eemeren, Grootendorst and Henkemans [2002]. These different accounts of dialogues and appeal forms can be summarize in a table:

ANALYSIS	**Macro Forms**	**Micro Forms**
Abstract Types	My Approach (Thesis)	
Concrete Instances		Your Approach (Critique of thesis)

My approach is summative – it abstracts its details from mind (thoughts and reasons) and community (dialogues) with respect to debates in discourse.

Behind the dialogue of any debate is the agent's "toolbox". That "toolbox" includes: a set of appeals and patterns thereof, a schedule of appeals and appeal strengths and its current OPR-T. In retrospect, I could have given a dialogical pattern showing strength schedules for agents as per the appearance of appeal forms and argument forms in some critical discussion or debate. I certainly will work on a less abstract bundle at the level of conversation over time using at least Austin's speech act theory and development as the work of Searle.

(8) Hamblin's Work & In/Formal Dialogue Systems.

I'm familiar with Hamblin's work. But I took the decision to not give an abstract dialogical-logical account at this time. All I required was an appreciation that (persuasive) support strengths can be assigned to appeals or arguments whatever form they take in dialogues.

Hamblin's work on retraction is relevant and left as implicit within the UAS I propose.

4.3.2.5. Fifth, it becomes clear from Chapter 5, on knowledge, that the real target of the thesis is the justification criterion in the justified true belief account of knowledge. If justification, however flexibly described, can be given a persuasion rating, then the persuasion knowledge gap becomes the justification knowledge-kind-of-belief gap. The candidate presents a very general account of justification in order to avoid the Gettier case.

(1) Justification, Alethic Attitude and Uncertainty.

The target is the justification component as well as hidden features of belief i.e. alethic attitude and the uncertainty/probability aspects of the JTB model. Indeed, I abstract away from justification proper to a notion called certification. I emphasize that this is not justification.

(2) Justification, Belief and the PKG

Roughly, as per what you say the persuasion-knowledge gap (PKG) becomes the case-as-"justification" – knowledge-kind-of-belief gap. Ultimately, the gap is bridged by the practical possibility of a case that amounts to a proof. A case or proof is ultimately a discoursive complexe of rational persuasion based on the strategic-contingent occurrence of arguments/reasons etc. in mind and/or community; and, case in this sense, is analogous to that found in (adversarial) courts of law. The singleton case e.g. a proof in mathematics is a special-case.

I replace justification with a more general notion of certification, of which net rational support is a case in the contest of positions. Certification coheres with the general feature of degrees of uncertainty (as per the propositional attitude of acceptance etc), which can also be called alethic uncertainty or probability; and can be applied even to non-language ways of knowing that are often alluded to by reliabilists. However, this is not enough. You only have knowledge of the fallible objective rational kind when the case amounts to a proof (as represented as a threshold on the CPR-T graph for the agent or community) in the context of discourse. There is, of course, a non-linguistic analogue of these conditions.

If you recall, I avoid the Gettier case by employing Hetherington's hedge, which is used by the originator in his case for epistemic gradualism.

4.3.2.6. Sixth, despite considerable reference to rhetoric in the thesis and the stated aim of reconciling rhetoric and philosophy, the discussion of this topic is very much a minority topic. But, there is a very sensible treatment of the philosophy rhetoric issue in a table on page 386 in the Conclusion. This, I propose, is one of the best things in the thesis. It helps pull the whole together.

(1) Rhetoric as a Minority Topic

Chapter 3 is all about rhetoric as the topic (or discipline) is about persuasion. It even critically examines the strategic basis of persuasion via a theory of appeals derived from Aristotle's work. Two things have to be kept in mind. They are:

(1) The theory-practice distinction.
(2) Wide/narrow notions of persuasion and therefore rhetoric.

In this chapter I focus on theory; that is, understanding persuasion in discourse and debate, using the notion of appeal as the central enabling concept. As for the practice, I think you are referring to works on classical rhetoric. A section on agents, rhetorical power and resistance (including reactance) was left out due to space limits and priority. Furthermore, chapter 4 is about strategy and tactics and is the appropriate place for the practicalities of classical rhetoric. Again, even in this chapter I had to limit myself. Here, I included stuff on logic – i.e. reasoning and argument (my narrow sense) in discourse and debate - that I originally placed in a separate chapter called "Inference" that doesn't appear in the official version. What I had previously planned to do was have a very short chapter 5; and then an other on logic.

(2) Philosophy-Rhetoric Controversy and Reconciliation

This is discussed in the introduction and conclusion. The purpose of the thesis was to construct a framework where I can reconcile them in the conclusion, which I did. At the core of this is the OPR-T, or more precisely the CPR-T in the context of discourse and debate. Essentially, I've made sense of rational persuasion, which involves arguments and evidence as its discoursive tools. And, arguments have cogency as their rational objective persuasive support strength.

4.3.2.7. In conclusion, the issues that I raise above are not the whole story of this thesis. I have chosen various areas in which I think that there is much more to say. I do not agree with the overall approach, but that does not reflect on the candidate's work in spelling out his position within a fairly orthodox framework. The candidate takes a position and follows it through in a competent and well researched manner. The candidate has many very interesting, but narrowly focused things to say about persuasion, belief, knowledge and philosophy.

(1) Focus of the Thesis

Appropriate to the requirements of the thesis, I have endeavored to keep my focus in relation to the central issue I address i.e. the philosophy-rhetoric controversy.

Essentially, having set the brief context of discourse and debate (dialectics), I conceptually moved from influence/persuasion (rhetoric), via Reason and argument, to knowledge (epistemology), showing how knowledge rests ultimately on an objective rational basis of reason, argument and evidence. However, the theoretical framework developed in the thesis can allow for even subjective irrational epistemologies as the OPR-T rests on appeals and grounds. Indeed, throughout I've commented on the generality of the framework, especially the OPR-T for both persuasive and non-persuasive influences.

Again, I recognize that rhetoric, and consequently persuasion, have had wide and narrow senses through their history. It seems to me that you uphold a wide account whereas I'm inclined to a narrow account at this time. However, if I concede to a wide notion, it would not be problematic to the theoretical framework of the thesis.

4.3.3. EDITORIAL REMARKS:

The thesis is well written and well structured. But there are some details which might be considered before final publication.

4.3.3.1. First, the extensive use of abbreviations makes the work difficult and sometimes annoying to read. One can understand that the candidate might use abbreviations when writing the thesis, but modern word processors make it very easy to convert abbreviations into the full phrases, titles, and the names of ordinary language. Common abbreviations such as "AI" for "Artificial Intelligence" and some very small handful of lengthy phrases specific to the technicalities of the thesis might well be left in abbreviated form, but the long list makes it necessary to read the thesis with a crib at hand all the time.

Understood. I shall work through them in the future and minimize according the proposed criteria which seems fair and reasonable as per readership requirements.

4.3.3.2. Second, there is a great deal of inconsequential appeal to the OED. It is just not clear, for example on page 252, what the appeal accomplishes but to muddy the waters. The statements of focus on lines 14 and 24 of page 252 are quite sufficient without the quotes from the OED. They are clear and appropriately indicative. But it would be too much of an editorial request that the OED appeals be revised before the final publication of the thesis.

In retrospect, shorter definitions and more critical discussion would help make the point. However, it is sometimes not easy to decide where to stipulate under the presumption of peer non-contention or go into some detail. Consequently, I took the position of highlighting authoritative definitions of the main terms and expressions.

I make my case for using OED in the Intro Sect.3.1, pp.17-20. If you refer to the *Fundamentals of Argumentation Theory* edited by van Eemeren, Grootendorst and Henkemans [1996], you can see how language usage in this area is quite ambiguous, vague and inconsistent. I wish to avoid this

(1) Keep its usage to more controversial, contention concepts.
(2) Keep quotes to concise
(3) Make sure its relevance is clear.

I had the view that I would go “back to basics” on language use but perhaps I over-played my hand. My attempt to define my terms and avoid unnecessary confusions is may be hyper-vigilant, if not paranoid at times.

What motivates me are Austin’s view. Let me echo the thoughts of Austin as revealed by Urmson, a longstanding scholar of Austin’s work. Urmson [p.571 v.1 1998] points out that Austin’s mature view, following his military service, rests on at least three crucial convictions. They are:

(1) Ordinary language, by which is meant language other than that of philosophy, as the tool of communication, contains all the distinctions about the world that people have found it necessary to make – not, of course all that can be made. As such, he thought, while it was not perfect, it was a much more powerful and subtle tool of thought than philosophers had traditionally recognized. .....
(2) Philosophers consistently misused and abused ordinary language, blurring and perverting the distinctions made. When they abandoned ordinary language in favor of a technical vocabulary of their own it was usually confused and imprecise, creating confusion and darkness rather than shedding light. Thus, they neglected and damaged the powerful tool available to them in ordinary language in favor of a less efficient one; no wonder that

little headway was made in answering the problems they tried to solve.

(3) While holding that much philosophical work was full of confusion, Austin did not, however, share the view that the sole task of the philosopher was to expose these confusions and to 'show the fly the way out of the fly-bottle' [as Wittgenstein suggested]. He thought that progress could be made, and that philosophy could shed light as well as clear away fog. But this required slow and careful labor, especially including a thorough examination of the vocabulary available and used in the area where the problem arose, long before asking the huge and assault-defying major questions.

Perhaps, as I suggested, I have been too rigorous in this respect. A future solution is to allocate shorter definitions via a source like OED plus a brief critique to a glossary and merely define terms as you suggest.

4.3.3.3. Third, I have added a list of typos. These errors need to be corrected before the final publication of the thesis. (MF: See comments below.)

The liste of typos was carefully reviewed in relation to the thesis. All were corrected as required. However, a few are not actually errors.

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