Magic, mixed realities & misdirection

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Magic, Mixed Realities & Misdirection

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Alex Davies

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i. Acknowledgements

General

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Häusliches Glück

ii. Statement of Authentication

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iv.   Abstract

This hybrid practice-based thesis argues that an effective way to approach perceptual and social realism within mixed realities is to combine new technologies (visual and auditory displays, mechatronics) with old techniques drawn from magic and cinema. In particular it looks at how the psychological principles of 'misdirection' taken from the practice of conjuring can contribute to the creation of compelling illusions in mixed reality. The research identifies those key principles of magic most relevant to this investigation as framing context, consistency, continuity, conviction, justification, surprise, and disguise. The practical application of these principles is demonstrated through the production of two case-study artworks created by the author: *The Black Box Sessions* (2008-2011) and *Häusliches Glück* (2009). In these research projects, the audience is no longer required to suspend disbelief during the media encounter, but is instead lead to believe that the virtual elements are experienced as being real and physically present.

KEYWORDS: Mixed Reality, Virtual Environments, Media Arts, Magic, Illusion, Conjuring, Virtual Characters, Computer Agents, Interactive Cinema, Realism, Presence, Deception.

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Chapter 1: Introduction

> Each artist brought a covered painting to the contest. When Zeuxis unveiled his work, his painted grapes were so realistic that birds flew from the sky to peck at them. Convinced of his victory, Zeuxis tried to uncover Parrhasios's painting to confirm the superiority of his work. He was defeated however, because the curtain he tried to pull back was Parrhasios's painting itself' *Naturalis Historia* Pliny the Elder
> [Macknik, Martinez-Conde et al. 2010: 43]

1.1 Introduction

This thesis will demonstrate that many of the physical and psychological principles of conjuring can be applied to the context of media arts as an alternative approach to audience engagement through suspension of disbelief, with a particular focus on virtual environments. It examines the creation of perceptively real virtual characters in two gallery based mixed reality installations developed by the author. The construction of illusion within such mixed realities conventionally relies on a range of presence factors including *perceptual* and *social* realism. Perceptual realism refers to formal characteristics of the medium such as photorealism whereas social realism refers to content characteristics such as a character's behaviour. Despite the audience members being aware that the computer agents or avatars are artificial, they are encouraged to engage with the virtual elements as if they were real. Put simply, the audience responds as if the experience was not mediated.

What if, rather than suspending disbelief during an encounter, the audience is deceived so that they interpret the experience as reality? Creative practices in domains other than media arts such as cinema, radio, and installation art suggest that deceptive illusions can be an effective means of creating compelling and engaging media experiences. This thesis examines this approach in the domain of mixed reality. In order to achieve this, we will examine a field in which deception forms the very foundation of audience perception: conjuring.

Techniques derived from conjuring can be employed so that audiences believe the characters they encounter are physically present[1]. To demonstrate this proposition, a number of techniques identified in the practice of conjuring are used in the installation art works *The Black Box Sessions* and *Häusliches Glück*. These are framing context, consistency, continuity, conviction, justification, surprise, and disguise. They are drawn from a range of techniques that magicians routinely employ to deceive audiences, commonly referred to under the umbrella term of 'misdirection'.

Scholars and artists have examined a range of subjects in an attempt to enhance an audience's experience in media arts. They have drawn from various established bodies of theory in theatre and performance studies [Laurel 1991], cinema [Marsh 2003a] and narrative [Murray 1997]. Although the practice of magic has developed over thousands of years into a highly refined art form that demonstrates significant insight into human psychology and perception, it is only in relatively recent times that the academic community has considered it. While the principles that form the foundation of conjuring are centred on the creation of illusions in a theatrical context, either on stage or via close-up magic, research has revealed how these techniques can be examined in a wider context. This research has occurred within the fields of cognitive science [Macknik, Mac King et al. 2008; Macknik & Martinez-Conde 2009; Macknik, Martinez-Conde et al. 2010] psychology [Hyman 1989; Jastrow 1900; Nardi 1984; Polidoro 2007; Tatler & Kuhn 2007] and interaction design [de Jongh Hepworth 2007; Lokuge 1995; Marchak 2000; Marshall, Benford et al.; Tognazzini 1993]. These investigations demonstrate the significance and value of techniques drawn from conjuring across a spectrum of fields. Indeed, as Macknik states 'there are specific cases in which the magician's intuitive knowledge is superior to that of the neuroscientist [Macknik, Mac King et al. 2008].' Tognazzini points out that it is 'hard to read through a book on the principles of magic without glancing at the cover periodically to make sure it isn't a book on human interface design" [Tognazzini 1993: 8].'

Although this thesis is concerned with mediated illusions, it should be made clear that the intent is not to provide a history of the evolution of media as an illusory platform. A range of authors have already addressed this comprehensively in media arts [Grau 2003], pre cinematic devices [Mannoni, Nekes et al. 2006] and the transition from conjuring to cinema in the era of 'the trick film' [North 2001; Ryu 2004; Solomon 2007].

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[1] Throughout this thesis virtual representations of humans will be referred to as virtual characters or agents (agents being computer controlled as opposed to avatars which are human controlled [Lim & Reeves]).

There has been considerable scholarly research into virtual environments across a range of fields such as entertainment [Hughes, Stapleton et al. 2003; Stapleton, Hughes et al. 2002a; Stapleton & Hughes 2005], psychology [Banos 2004; Brooks Jr 1999], and education [Azuma, Baillot et al. 2001; Brooks Jr 1999; Ellis 1995; Hughes, Stapleton et al. 2003]. The creative development of virtual environments within electronic arts, one of the central concerns of this thesis, has also been thoroughly examined by authors [Billinghurst, Kato et al. 2001; Eng, Mintz et al. 2006; Grau 2003].

Virtual environments encompass a range of implementations from complete immersion to hybrid media spaces. Immersive works place the viewer within the virtual world with a suggestive impression of 'moving and acting there in 'real time' and intervening creatively' [Grau 2003]. The common element in this approach is that the audience can act within the environment, and the environment responds to their actions. The focus is upon complete immersion in which the display system is all encompassing in an attempt to shut out extraneous input from the surrounding physical space. In contrast to complete immersion lies a range of possible experience in which virtual elements co-exist with the physical world, supplementing reality, rather than completely replacing it [Azuma 1997].

In 1994 Milgram and Kishino developed the first comprehensive approach to classifying the variations of virtual environments with their concept of a Virtuality Continuum [Milgram & Kishino 1994]. Although Milgram and Kishino's ideas are centered on display systems and the visual perception of the subject, the concept of the continuum can be broadly applied to a range of sensory information and mediation inherent in complex multisensory environments. The figure below from *Milgram's Taxonomy of Mixed Reality Visual Displays* [1994] represents the span of mediation that can occur, ranging from the real environment void of any electronic mediation to a virtual environment that perceptually encloses the subject in an entirely artificial reality.
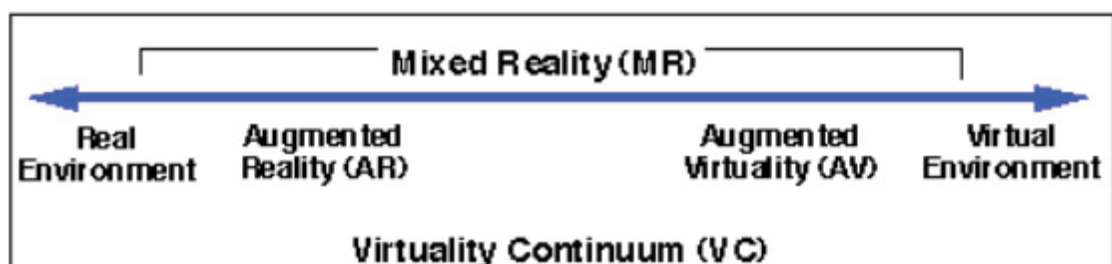
Figure 1   The Virtuality Continuum [Milgram & Kishino 1994].

Milgram further defines two key terms to describe mixed reality. *Augmented reality* is defined as any case in which an otherwise real environment is 'augmented' by means of virtual (computer graphic) objects. In contrast, *augmented virtuality* starts from a virtual world, and embeds representations of physical objects within it [Milgram & Kishino 1994]. The research projects undertaken as part of this thesis are concerned with the former distinction, that is, to employ technologies to augment the real environment (in *Häusliches Glück*) or perceptively real electronic representations of the physical environment (in *The Black Box Sessions*). Common to all conventional approaches to mixed reality is 'the existence of a combined pair of a real and virtual space' and irrespective of what display technology is used (such as mobile device or HMD) 'the visual as the dominant mode of perception and integration of real and virtual space [Strauss, Fleischmann et al. 1999].'

Extending Milgram's conceptualisations of augmented reality and augmented virtuality is the notion of mixed reality boundaries. While Milgram's model focuses on superimposing the virtual and the physical environment (or vise a versa), 'mixed reality boundaries' refer to spaces that are not overlaid but adjacent and remain distinct [Koleva, Schnädelbach et al. 2000]. Key to this approach is the ability of individuals in the shared physical space to see and communicate through the boundary to the avatars present, and, likewise, the occupants inhabiting the virtual space are able to interact with individuals in physical space. A simple example of this concept is a space where an image from a virtual environment is projected into a physical environment and a live camera feed from the physical environment is presented as a video texture within the virtual environment. The distinguishing feature of mixed reality boundaries is that equal weight is placed upon the real and virtual environments. Mixed reality boundaries additionally provide the scope to support multiple links between physical and virtual spaces, similar to the way in which common boundaries such as doors, walls and windows are employed to structure physical space [Strauss, Fleischmann et al. 1999]. This approach to mixed reality encourages agency, enabling the user to easily traverse back and forth between primarily real and primarily virtual environments, repositioning themselves along the Virtuality Continuum according to their interest and whether they want the physical or the virtual to be their primary focus [Koleva, Schnädelbach et al. 2000].

Besides mixed reality boundaries, revisions to the Virtuality Continuum have been suggested [Nijholt 2006] [Stapleton, Hughes et al. 2002b] that conceptualise additional axes

to address possible modalities and experiences beyond the visual centred approach proposed by Milgram.

Stapleton's mixed-fantasy framework (Figure 2) outlined in [Stapleton, Hughes et al. 2002a] provides the structure most relevant to the works in this thesis in which the real world and electronic mediation are further interwoven with narrative.
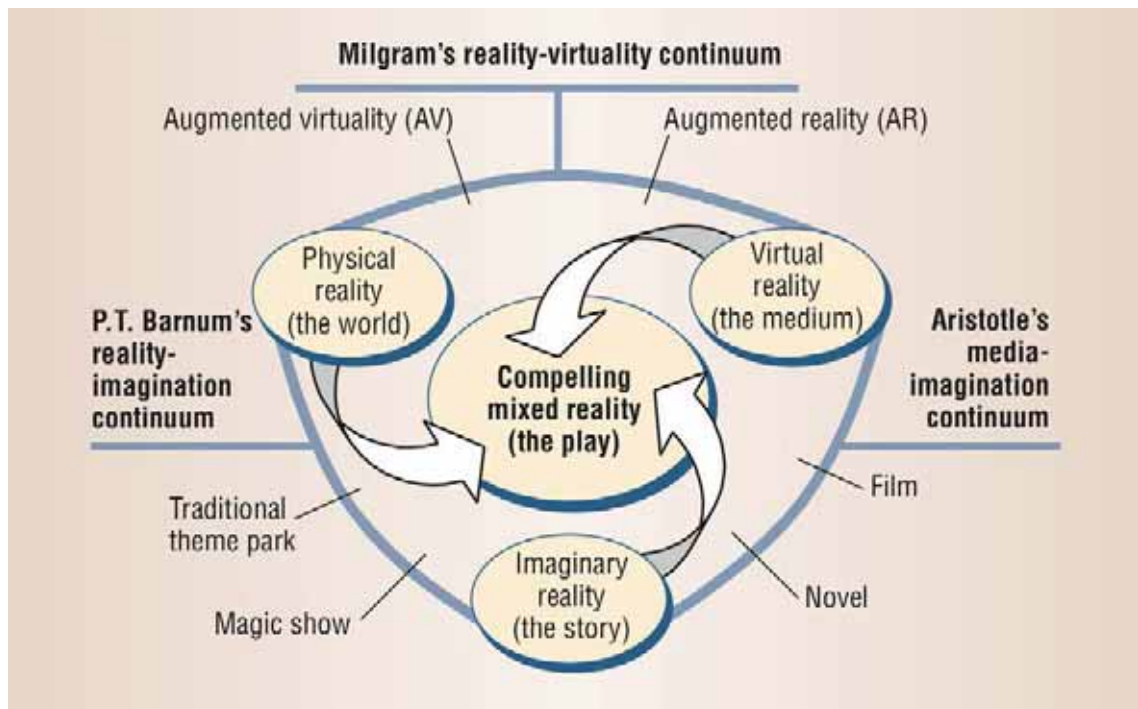
Figure 2   Mixed Fantasy Framework suggested in [Stapleton, Hughes et al. 2002a]

Although awareness of Stapleton's continuum is valuable to the research in this thesis, it is somewhat problematic to firmly place the artworks within this conceptualisation of mixed realities as both art works present complex multisensory environments that rely on a range of different devices and methods. Nijholt, effectively sums up the approach to mixed realities undertaken in this thesis at the most basic level when he suggests that 'a human can interact with virtual and physical environment and virtual and real humans when devices and modalities allow a smooth integration of these realities' [Nijholt 2006: 3]. In *The Black Box Sessions*, this approach is articulated through compositing virtual elements within a live video feed that incorporates the spectator. In *Häusliches Glück* it is through the use of image displays, sound and mechanics that combine to give the impression that the virtual characters co-inhabit physical space with the audience.

Irrespective of what approach to the above conceptualisations of mixed realities is undertaken, illusion is the essential element in the construction of electronically mediated experiences. Neuroscientist Stephen Macknik defines illusion as 'dissociation between physical reality and subjective perception of an object or event' [Macknik, Martinez-Conde et al.]. This psychological process is how we perceive and emotionally engage with all forms of media. In cinema, illusion is defined as the 'diegetic effect' whereby the audience 'experiences the fictional world as the environment' [Tan 1994: 11]. In literature 'the persuasiveness of narratives is known as Transportation' [Schubert & Crusius 2002: 2]. In the domain of electronic media audience experience of 'being there' is defined as presence [Slater & Usoh 1994], a term similarly used in theatre to describe audience engagement [Power 2008]. Common to all these definitions is the notion that the 'the actual physical environment (VR laboratory, cinema, reading chair) is suppressed in favour of an alternative, medially presented and cognitively construed environment' [Schubert & Crusius 2002: 3].

The nature of illusion across these domains is commonly discussed in terms of what English poet Samuel Taylor Coleridge claimed as the audience willingly suspending disbelief [Coleridge 1817]. Where magic fundamentally differs from these other illusory mediums is that 'successful deception requires unquestioning belief' [Nelms 1969: 19] thereby making the impossible possible. Whilst suspension of disbelief (or conviction to use the conjuring parlance) contributes to the success of an illusion, the audience on a fundamental level is deceived. Lokuge notes:

> In the floating lady illusion, what good is it to ask spectators to imagine that the lady is floating? On the contrary, the spectator will not willfully believe that the lady can float, but the actions of the magician will involuntarily make the spectators believe in the impossible. [Lokuge 1995: 11]

Figure 3   Floating lady illusion, Keller 1894 {Grafton, 2011 #581}

The distinction between relying on the audience to willingly suspend disbelief in a mediated context to achieve an illusion and doing so through methods of deception is critical. Conventional practices in media arts rely on suspension of disbelief to achieve the illusory state in which the user engages with the mediated content. The strength of the resulting illusion is directly related to the willingness of the audience to suspend disbelief [Patrick 2002]. For example, in an immersive CAVE[2] system, the user suppresses the understanding that virtual objects and characters are not in fact real, and relates to them as if they were. Presence scholar Matthew Lombard suggests that:

> A person participating in a videoconference, exploring a virtual environment, or watching an IMAX film or a television program has chosen to engage in the activity and knows that it is a mediated experience. She or he can encourage or discourage a sense of presence by strengthening or weakening this awareness. If we want to increase a sense of presence for ourselves we try to "get into" the experience, we overlook inconsistencies and signs that it is artificial, we suspend our disbelief that the experience could be nonmediated. When we want to decrease presence, as when we watch frightening or disturbing media content, we remind ourselves that "this isn't really happening; it's only a movie/TV show/game/etc." [Lombard & Ditton 1997]

Audience members are not in a position to effectively 'encourage or discourage' the sense of presence if their media experience is anchored in deception, as the mediated content is perceived as real and occurring in shared physical space.

To successfully deceive individuals regarding the representation of virtual characters the media needs to be both perceptively and socially real. While other factors contribute to the sense of presence in the two installations as a whole such as immersion etc., without realism, deception on the most fundamental level would not be possible and the media would shift back to relying on an audiences' willingness to consistently suspend disbelief. In this sense, if the objectives of the artworks are met, comprehensive perceptual and social realism is achieved. Such a deception has the potential to lead audiences to question what is in fact real or virtual, and to believe that virtual characters are real and physically present. Put simply, experience of virtual characters in mixed realities cannot be perceived as any more real than when an audience truly considers them to be real.

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[2] A CAVE is a virtual reality interface that positions the spectator within a room surrounded by projections and spatial audio displays with the aim of complete immersion. [Cruz-Neira, Sandin et al. 1992]

Hyman states that deception 'implies that an agent acts or speaks so as to induce a false belief in a target or victim [Hyman 1989: 133].' In the instance of electronic media, false belief is induced via interaction between the formal and content characteristics of the medium and the ability of these elements to successfully simulate reality.

When discussing realism in mediated experiences it is from the broad perspective of 'how closely the artificial world resembles a corresponding possible real world' [Christou & Parker 1995: 53] or as Lombard defines the 'degree to which a medium can produce seemingly accurate representations of objects, events, and people— representations that look, sound, and/or feel like the "real" thing' [Lombard & Ditton 1997]. ' Lombard further identifies two forms of realism which are termed 'social realism' and 'perceptual realism':

> Social realism is the extent to which a media portrayal is plausible or "true to life" in that it reflects events that do or could occur in the nonmediated world [...] While presence as realism may include this type of social realism it also includes a perceptual element that is separate: a scene from a science fiction program may be low in social realism but high in perceptual realism because although the events portrayed are unlikely, the objects and people in the program look and sound as one would expect if they did in fact exist. On the other hand, the people and events in an animated presentation may be high in social realism but because they are not "photorealistic," they are low in perceptual realism. [Lombard & Ditton 1997]

This thesis will examine realism based on these two concepts, perceptual realism which is a characteristic of media form, and social realism which is a property of the media content. Addressing both these attributes encourages audiences to suspend disbelief during a media encounter, as examined in presence research, but these characteristics can also be exploited as a means to deceive audiences so they question the authenticity of the media experience itself. Tognazzini proposes that in mediated experiences there is a *threshold of believability* 'a point at which careful design and meticulous attention to detail have been sufficient to arouse in the spectator or user a belief that the illusion is real. The exact point will vary by person and even mood, so we must exceed it sufficiently to ensure believability [Tognazzini 1993: 361].' Successful deception ensures that this threshold is comprehensively exceeded.

As Christo and Parker point out, any sense of reality in virtual reality is in itself illusory because the 'objects of the artificial world are non existent' [Christou & Parker 1995: 53].

Nevertheless, social and perceptual realism can be utilised to simulate real world characteristics in corresponding virtual elements. This is the point where current approaches to realism in electronic media are deficient. Due to limitations in technology and artificial intelligence, simultaneously addressing both these factors in virtual environments has been somewhat elusive. Often one of these two approaches has to be traded off in varying degrees depending on the application. For instance, the dominant mode of visual representing virtual characters is computer generated 3D content. These characters can be imbued with artificial intelligence and are therefore capable of dynamically responding to human interaction. Even though such behaviours increase the sense of social realism within the scene, they are still clearly artificial and are more aptly categorised as what Ferwerda terms a physical or functional realism rather than appearing photorealistic [Ferwerda 2003]. Lombard similarly contends that 'one of the critiques of current virtual reality technology is that it has not yet achieved a photorealistic appearance' [Lombard & Ditton 1997]. Virtual characters high in perceptual realism (photorealistic) on the other hand are often deficient in social realism, as they cannot accurately respond to the immense complexity of audience interaction.

There is no doubt technology and software has developed significantly since Lombard's statement and positive progress has been undertaken by research groups on pressing issues such as image registration [Klein & Murray 2007], image fidelity [Dillow 2011] and sound synthesis [Steele Aug. 8, 2011]. It is still, however, not currently possible for realistic 3D simulations to dynamically operate and seamless co-exist for sustained periods in most practical augmented reality applications. These limitations will no doubt be successfully addressed in the not too distant future given recent trends that are slowly edging media experiences closer to Sutherland's ideal of 'The Ultimate Display'

> One must look at a display screen as a window through which one beholds a virtual world. The challenge to computer graphics is to make the picture in the window look real, sound real, and the objects act real.
> (Grau 2003)

Until that point however, the two art works in this thesis offer a range of novel approaches to finding an effective balance between formal (perceptual realism) and content (social realism) characteristics in order to address these deficiencies within interactive media environments and does so with the application of consumer grade technologies.

These art works present approaches to realism in mixed realities that do not necessarily rely on cutting edge technologies or unlimited resources, and in many circumstances can be implemented using a range of different media within varying constraints.

So why approach mixed reality through the framework of conjuring deceptions? There are several compelling reasons in terms of audience experience. If the deception is successful and the audience truly believes that virtual characters are real, the result is a media experience with a high degree of presence, and in particular, the most successful form of perceptual realism that one could hope to attain, i.e., if the user believes that the virtual elements are real, Tognazzini's 'threshold of believability' has been truly exceeded. Deception ensures that audiences are unable to consciously shift their attention in and out of the mediated experience effectively. Audiences are not afforded this ability in the installation works due to the immersive nature of the environment and the all pervasiveness of the mediated content. Separation is only truly possible when the audience leaves the installation environment as a whole. This is particularly the case in *Häusliches Glück* where the experience is more aptly described as stepping through the screen and becoming an integral part of the film, rather than experiencing the work from a distinctly separate vantage point in which the boundaries of reality and simulation are clearly defined. The content is perceived as real and as such is treated like any other element within the audiences' physical reality. The illusion is therefore consistently maintained irrespective of the audiences' cognitive state, as long as the pretext remains.

Alternatively, if the deception breaks down at some point in the media encounter, the experience is transformed to one more closely linked to that of a conjuring illusion, the delight of being duped, in which 'the spectator complacently gives himself up with pleasure to having his normal perceptual interpretations violated, his lucidity led into a sort of voluptuous panic and his world of order and reason temporarily shattered [Bhownagary 1972: 32].' Both these outcomes encourage engaging experiences in mixed realities. Even failure of the deception is transformed into a positive media experience.

Conjuring further informs us that the most novel technologies are not always necessary in creating compelling illusions. This is even more relevant to media arts, and virtual environments in particular, which for the most part are driven by cutting edge technologies. Many conjuring methods have historically exploited the audience's lack of understanding of science and technology to execute illusions. For example Mangan suggests that mechanical automata of the 18th century succeeded as 'technology had

developed sufficiently to allow for the creation of figures which seemed sufficiently lifelike, whilst the mass production of the Industrial Revolution was not sufficiently advanced to make technological marvels a commonplace [Mangan 2007: 86].' Similarly Robert-Houdin's *Light and Heavy Chest*[3] baffled audiences as 'the phenomena of electro-magnetism were entirely unknown to the general public in 1845, when this trick of the spirit cash-box was first presented [Hopkins 1897: 17].' Even devices such as the Magic Lantern of the 17th century had the capacity to 'deceive, terrify and manipulate naïve spectators […] playing on the audiences superstitions using a new optical instrument [Grau 2007].'

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[3] The following account of the illusion is from Magic: Stage Illusions and Scientific Diversions including Trick Photography.
The conjurer came forward with a little wooden box, to the top of which was attached a metal handle, and remarked as follows to the audience : " Ladies and gentlemen, I have here a cash box which possesses some peculiar qualities. I place in it, for example, a lot of bank-notes, for safe-keeping, and by mesmeric power I can make the box so heavy that the strongest man cannot lift it. Let us try the experiment." He placed the box on the run-down, which served as a means of communication between the stage and the audience, and requested the services of a volunteer assistant. When the latter had satisfied the audience that the box was almost as light as a feather, the conjurer executed his pretended mesmeric passes, and bade the gentleman lift it a second time. But try as he might, with all his strength, the volunteer would prove unequal to the task. Reverse passes over the demon box restored it to its pristine lightness. This extraordinary trick is performed as follows: Underneath the cloth cover of the run-down, at a spot marked, was a powerful electro-magnet with conducting wires reaching behind the scenes to a battery. At a signal from the magician a secret operator turned on the electric current, and the box, which had an iron bottom, clung to the electro-magnet with supernatural attraction. It is needless to remark that the bottom of the cash box was painted to represent mahogany, so as to correspond with the top and sides. The phenomena of electro-magnetism were entirely unknown to the general public in 1845, when this trick of the spirit cash-box was first presented. As may be well imagined, created a profound sensation [Hopkins 1897: 17].
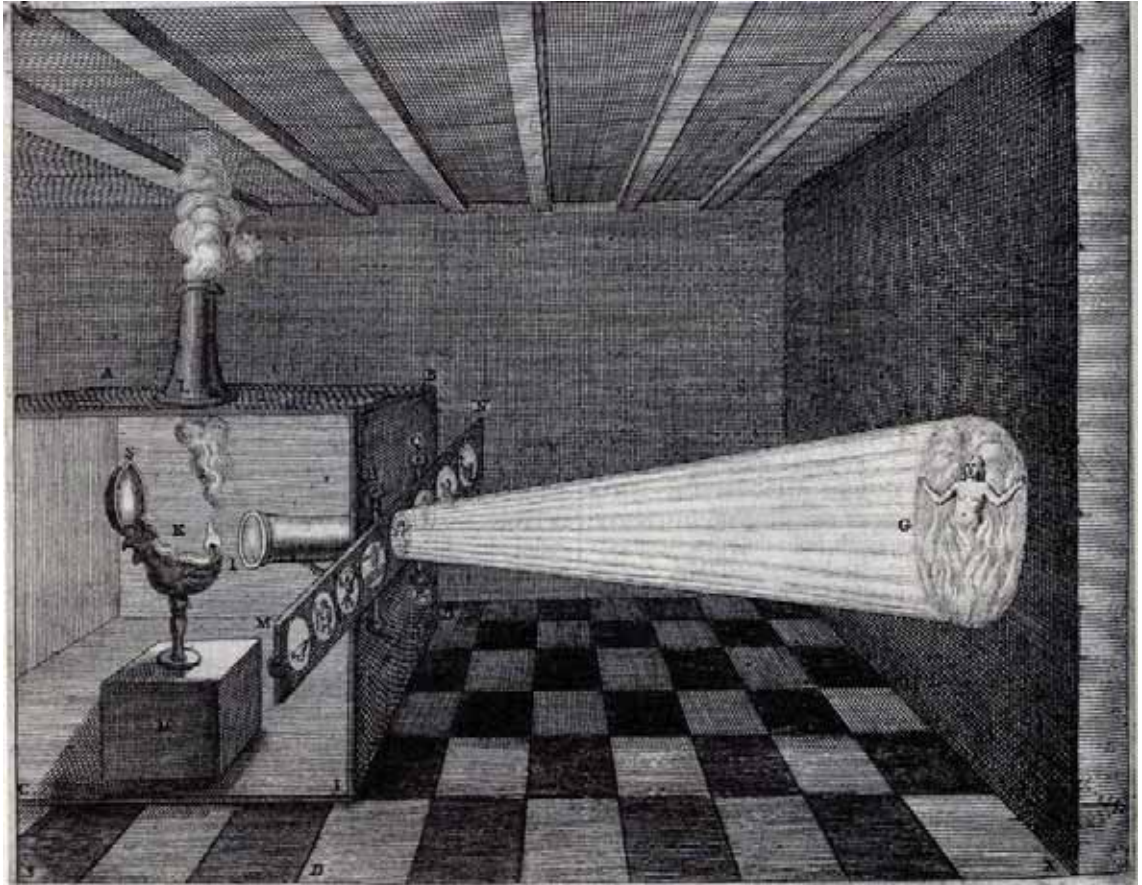
Figure 4   Magic Lantern apparatus

Although these examples demonstrate one methodological approach to conjuring deceptions, for the most part magicians rely on 'little technology more complex than a rubber band, a square of black fabric or length of thread [Steinmeyer 2006: 7],' and succeed by 'making the least possible use of trickery and applying all the psychology they could muster [Nelms 1969: 2]'. There lies the adaptability of magic. A single effect can often be achieved by a wide range of methods. In other words, rather than being device-centric, the principles of misdirection can be applied to suit a specific purpose. This is the very reason that the conjuring stratagems outlined in this thesis are highly adaptable in media arts and have been successfully employed in two distinctly different approaches to mixed reality in *The Black Box Sessions* and *Häusliches Glück*.

One final way that magic can enlighten media arts practice is the pursuit of robust illusions in what to all intents and purposes is a fragile and unstable territory across both domains. Many forms of entertainment media are reasonably forgiving as to the manner in which audiences interpret their success or value. Hollywood is a testament to mediocre screenwriting that routinely finds its way to the screen. Magic, on the other hand, is not

afforded this luxury. For a magician, failure of an illusion is wholly unacceptable since on a fundamental level it renders them unable to earn a living. For this reason magicians have refined their craft in an iterative process over many hundreds of years. What is also unique about an audience's experience of a conjuring illusion is that the audience expects to be deceived and therefore attempts to understand and solve the puzzle that is the deception. Although consciously aware that they will be tricked, never the less tricked they are. The magician's art, therefore, must be seamless to withstand this scrutiny. Fitzkee notes that 'even though the spectator may know the secrets of psychological deception—all of them—he cannot possibly know *when* they are being employed by the magician. If the performer is skilful, there is no external distinction between deception and truth [Fitzkee 1975: 36].' It is for this reason that magicians are even able to routinely deceive their colleagues on a regular basis. Schiffman highlights this fact when discussing a routine by Penn and Teller in which Penn describes the seven principles of sleight of hand (palm, ditch, steal, load, simulation, misdirection, and switch) while Teller 'stands there and performs the very sleights that Penn is describing'. The processes are so effective that even with specific knowledge of what is occurring, the audience is never the less 'enthralled and baffled' [Schiffman 1997: 78]. The processes that magicians use are effective because they distil the physical and psychological elements of deception to the bare minimum required to achieve an end. Any extraneous or unnecessary elements are eliminated. This notion holds true in the manner in which illusions in media arts can be effectively designed and constructed. For example, Christou and Parker suggest 'it would be pointless to expend considerable time on a particular attribute of visual imagery if the visual system is incapable of utilizing such attributes effectively' [Christou & Parker 1995: 54]. Developers can draw from the art of conjuring and develop mixed realities based upon the most fundamental techniques required for effective illusions. Although 'for many reasons the level of realism attainable through the use of computer generated artificial realities is now, and may always be, incomparable to the intricate and complex structure of the real world [Christou & Parker 1995: 53]', its salient elements can however be addressed thereby creating efficient and robust illusions.

The manner in which a conjuring illusion is typically structured serves as an additional framework for examining the construction of illusion in the practice-based artworks. A trick can be identified as being comprised of two key elements; first, the method used to create the illusion (a secret device or unknown procedure), and second, the effect (desired

outcome of audience experience). The method can be further examined in terms of the mechanics of the illusion (physical elements) and showmanship (the elements, specifically misdirection, surrounding the use of the mechanics that contribute to the success of the illusion). Parallels of these concepts are inherent in the building blocks of mixed realities. *The Black Box Sessions* and *Häusliches Glück* will be examined in terms of the technology used (mechanics), the psychological principles of illusion (misdirection), and how both these elements contribute to the overarching illusion (effect).

In the simplest of terms, the works presented in this thesis are magic tricks. The central focus of the trick being that the audience perceives virtual characters as real and physically present. Just as in conjuring, the trick is transformed into an illusion via elements of showmanship such as drama and atmosphere. The distinguishing feature, however, and unlike a conventional magic trick, there is no climactic flurry in which the alternate reality is revealed such as pulling a rabbit out of a seemingly empty hat. Instead, if the works succeed, the illusion is sustained and virtual characters are no longer perceived as a simulation thereby bridging reality and virtuality.

> We live between two realms: our physical environment and cyberspace. Despite our dual citizenship, the absence of seamless couplings between these parallel existences leaves a great divide between the worlds of bits and atoms. At the present, we are torn between these parallel but disjoint spaces.
> [Ishii & Ullmer 1997]

This thesis endeavours to demonstrate how these atoms and bits can be made to momentarily collide in mixed realities by using the same approaches to illusion employed by magicians for centuries.

1.2 Methodology: Art practice as research

Although the domain may change, the underlying theory remains the same; and while new mappings must be made from the knowledge embodied within the theory to the applied domain, this is less problematic than having to begin research afresh.
[May & Barnard 1995: 7]

1.2.1 Introduction

Practice based research in the arts has been comprehensively examined by a range of authors including [Gray & Malins 2004] and [Sullivan 2009]. These authors outline the various approaches undertaken via this research approach and the contribution of practice based research to the wider scholarly community. While there are a range of definitions of practice based research, for the purpose of this thesis it is sufficient to define the process as 'the systematic use of the artistic process, the actual making of artistic expressions in all of the different forms of the arts, as a primary way of understanding and examining experience by both researchers and the people that they involve in their studies [McNiff 1998: 29].'

Sullivan describes the artistic research process as transcognition; 'visual arts knowing where the forms, ideas, and situations are informing agents of mind that surround the artistic self during visual arts practice. These strategic interactions occur over time and involve iteration and negotiation as individual purpose is mediated by situational factors' [Sullivan 2009: 133]. The processes of iteration and negotiation are particularly relevant to the domain of media arts. As Candy suggests 'by its very nature, interactive art has particular characteristics that necessitate a different form of inquiry to conventional areas of discourse in this field. The involvement of the audience in the active experience of the work, for one thing, is a radical departure from normal expectations of our relationship to art works' [Candy 2006: 4].

Because of this departure, the presentation of interactive works is seen by many media arts practitioners, as not only a public platform for creative endeavours, but, equally as a test environment to ascertain whether speculative approaches to research problems succeed or fail, thereby informing future developments. For this reason, although practice based research has been somewhat valorised in recent times within the arts generally, it has for many media artists always been assumed a necessary part of creative development. This

is highlighted in a statement by notable media artist David Rokeby that exhibitions 'serve as a public research laboratory where my ideas about interaction and experience are tested, affirmed, or shot down. This is a condensation of the results of my free- form research [Rokeby 1996].' My research practice over the years has drawn from Rokeby's approach to the development and presentation of artworks. My works have always had audience experience as a central concern and thus they are never fully realized until their public presentation. Only at this point can the educated guesswork of development be effectively evaluated. The iterative mode of research that ongoing development and public presentation entails concurrently enables the refinement of specific techniques and the revelation of new pathways of investigation.

This mode of research was central to the development of the two practice based works presented in this thesis. The first research project, *The Black Box Sessions* was conceived to address questions that arose after numerous public presentations of a work entitled *Dislocation* that was developed prior to the commencement of this thesis. An overview of this work and influence is outlined in the following section Background Research. *Dislocation* was the first mixed reality artwork that I had undertaken and the wide ranging and unexpected audience outcomes provided the impetus to further investigate the illusionary capabilities and potential of this medium with this thesis. Although the artistic approaches undertaken in *The Black Box Sessions* and *Häusliches Glück* were undoubtedly informed by the entire span of my artistic practice (for instance, attitudes to interactivity and interface design), it was *Dislocation* that specifically shaped the direction of the two research works.

Beyond the direct progression of artistic research leading to *The Black Box Sessions*, the work itself was presented three times during the course of my candidature during which time it underwent substantial revisions in both physical structure and approaches to content. This goes to show the ongoing nature of practice based research in media arts, which is in contrast to more traditional notions of a 'finished' artwork, static once exhibited.

As the practices of magic are a central concern of the undertakings in this thesis, it is interesting to consider that the research approaches of artists and magicians are by no means dissimilar. Macknik proposes that magic as a discipline has 'a long legacy of informal experimentation. This informal research by magicians aims to determine what conditions

allow for the maximum manipulation of human attention and perception' [Macknik, Mac King et al. 2008: 1].

Kuhn additionally concludes that theories of magic are based upon both accumulated knowledge and successes and failures of the public presentations of tricks whereby 'each performance can be viewed as an experiment that tests the magician's theory; this theory being continually revised until it agrees with experience' [Kuhn, Amlani et al. 2008: 350].

Kuhn's statement on magic resonates with the previous comment by Rokeby regarding media arts practice. Both practitioners utilise public presentation as vital facets for ongoing innovation in their craft. It is therefore revealing that not only are the distinct insights into perception and psychology from magic relevant to this research, but the overall manner in which magicians have established this body of knowledge very much mirrors the practices of artists working with interactive media. An iterative process in which failure offers insight to further advance the field as Kuhn concludes 'a magician hoping for future engagements must therefore learn from such failures and change the trick so as to improve its effectiveness' [Kuhn, Amlani et al. 2008: 12].

1.2.2 Background Research

This section presents an overview of the background research that significantly influenced the development of the research questions posed in this thesis and the subsequent art works *The Black Box Sessions* (Chapter 4) and *Häusliches Glück* (Chapter 5). A discussion of *Dislocation* (2005) reveals continuity in my research practice and a clear evolution of concepts and techniques. This section additionally serves as a foundation for a comparative analysis between *Dislocation* and *The Black Box Sessions* in Section 4.4.3, in which various benefits and disadvantages in terms of audience experience between the two approaches to mixed reality are examined.

Dislocation is a gallery-based installation that employs real-time video, audio and audience locational data to suggest the illusionary existence of virtual characters co-inhabiting the exhibition space with the audience. The exhibition space itself is empty, apart from four small inset screens located at the front of the room. Concealed from the participants, a camera is embedded in the rear wall, and an array of eight speakers are mounted within the walls around the floor of the room.

Figure 5   *Dislocation*, installation view, Liverpool UK

The neutral room is designed to diminish preconceptions of where the experience might lead. As a counterpoint to the visual minimalism, an eight channel audio composition is presented that forms the atmospheric bed on top of which the aural mixed reality elements are subsequently introduced.

Over one hundred scenarios were developed in which virtual characters are presented as occupying the room with the audience via the displays and surrounding audio system. The scenarios were recorded within a green screen studio using a wide range of actors and post produced so they could be composited over the live video feed of the audience. Custom software was developed in Max/MSP[4] to sequence this video and sound content in relation to the location of audience members within the installation.

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[4]   MaxMSP is a graphic programming environment developed by software company Cycling 74.

Figure 6   *Dislocation,* green screen production

Lizzie Muller provides a perspective on the work in terms of audience experience:

> In Alex Davies's *Dislocation*, four small mounted monitors are set back in one wall of an
> enclosed installation space. You need to approach them closely to see what they are
> showing. It takes a moment to realise that what you can see is your own back, and those of
> your neighbours peering at the adjacent monitors. The screen flickers slightly, as if there is
> a minor disruption in transmission, and someone else enters the gallery, nearer to the
> camera, talking on a mobile phone. The sense of their presence behind you is spine-
> tinglingly palpable, as is the illicit feeling that you are eavesdropping on their conversation.
> But glance over your shoulder and you find the room is empty. The other presence was a
> phantom, a ghost in the machine.
> [Muller 2005]

Following is an overview of the key approaches to the physical design and content of
the installation including how people responded to these design choices. After numerous
public presentations of *Dislocation*[5] some of these approaches were identified as

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5   The work has been presented at the following exhibitions 2009 Trace Elements, Performance Space,
Sydney Australia. 2008 Trace Elements, Tokyo Opera City Art Gallery, Tokyo, Japan. 2008 Mirror States,
Campbelltown Arts Centre, Sydney, Australia. 2006 Under the Radar, Foundation for Art and Creative
Technology (FACT) Liverpool, UK. 2005 Vanishing Point, Melbourne, Australia.

unsuccessful (not conforming to design expectations), and were avoided in the subsequent research projects.

The physical environment of *Dislocation* was designed to lead the viewers into particular situations, without conveying the feeling of being obviously manipulated. This approach gives the viewer a sense of freedom so they can behave in a natural manner. The premise is that if audience experience of the space is natural and audience members are able to act upon their own free will, then the mediated content is similarly received as less contrived. The use of a transparent interface additionally enables the audience to immediately and intuitively respond to the content without the requirement of learning the appropriate means of interaction. Even though a user's actions in the environment are unconstrained, the spatial arrangement of elements is designed to control the bounds of these activities in order to establish and maintain the illusion.

One challenge to the successful creation of an illusion was addressing the intersection of virtual characters and viewers within the physical space (when viewed in the visual display). Several techniques were used to minimize collisions between real and virtual elements. Many of the characters were recorded so that they would only occupy the rear area of the room thus ensuring the maximum separation with viewers situated at the screens. The physical entrance to the installation is positioned near the front of the room. Upon entry the screens become the prominent focal point due to their proximity to the door. This encourages individuals to move towards the screens at the front of the room rather than entering the space and wandering around without focus, thus reducing the chance of collision with the virtual characters.

The screens themselves are positioned beneath eye height and set back from the wall ensuring that the audience has to be in close proximity and lean forward to properly view the display. This provides two benefits. First, it further controls the location of the audience within the room and, second, by making the audience peer directly into inset screens, the positioning removes much of the individual's peripheral vision. The screens therefore act as the viewer's primary visual reference to reality and create a shift in focus to the electronically mediated representation of the room.

Figure 7   *Dislocation,* audience members situated at screens, Sydney Australia

Certain contingencies are also considered in the software design. In the instance when viewers might stray from the bounds of the visual displays, it was necessary to find a way to smooth over aberrations in the illusion when virtual characters and humans collided. Instead of the viewer seeing an agent walking through an audience member, a tracking and collision detection system was designed in which the live visual feed is temporarily distorted at the moment of occlusion. This gives the impression of a glitch in the system or a breakdown in the technology. The illusion is therefore sustained and the audience has the impression that they are experiencing an unstable electronic system.

The Black Box Sessions involved many of the same challenges, but, due to the complexity of the process outlined above, and the potential of multiple audience members compromising the illusion, *The Black Box Sessions* was fundamentally designed to avoid the use of these devices. This is explored further in Chapter 4.

The approach to sound in *Dislocation* is twofold. Firstly, it establishes an overall mood and, secondly, it is used as a device to heighten the sense of the visual illusion through cross modal reinforcement. Multi channel atmospheric sound is used to create a low level of tension within the room and broadly shape the audience's initial emotional state, much in the same manner as non diegetic sound in cinema. The ambient sound base additionally

facilitates blending sound content of the virtual characters with the live environment, acting as an intermediary acoustic zone through which both worlds can fluidly shift.

Sound design techniques from cinema such as off-screen sound are applied to *Dislocation*[6]. The presence of the virtual characters can be heard prior to their entry into the room, just as one would perceive the impending entrance of a live audience member. These initial spatial audio cues are utilized to set up the forthcoming visual illusion. When the virtual character's presence becomes evident in the visual displays, the sounds they generate are spatialised via the eight channel speaker array so that virtual footsteps move around the room in conjunction with the character's movements; mobile phones ring next to you as the character reaches for their phone; and shrieks, laughs, barks and kisses all spatially drift around with their virtual counterparts.

A number of video sequences of virtual characters appearing in the space were developed to explore the potential resonance between the live subject and the virtual characters. Beyond the successful technical implementation of the illusion, the choice of scenarios was the next most critical decision. Several broad categories of emotion were considered as starting points for the scenario development. These encompass curiosity, discomfort, happiness, confusion, and fear and are manifested through over one hundred pre-recorded video sequences.

Two subsets of virtual character interactions were developed with the aim of evoking these responses in the audience. These take the form of passive and active situations. Passive activities include characters simply inhabiting the same environment as the viewer, a virtual gallery visitor passing through, or a transient conversation between two characters. Active situations are based on direct connections with specific audience members. For instance, if an individual is located at screen number 1, a virtual character enters and proceeds to address the viewer, begging for money, whispering to them, or being aggressive and physically threatening. Five permutations were recorded for each scenario (one for each of the four screens and one at the rear of the room for all screens) so that the virtual characters could be tailored to the specific audience configuration in the installation at any given time. A database and tracking system is used to present the most appropriate scenario for the screen distribution of audience members. For instance, if individuals are at screen number 1, 3 and 4, a virtual character can be presented who, mimicking an audience

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[6] Off-screen sound is a film convention in which a sound is represented by a source assumed to be related to screen space, but its origin is outside the visible frame.

member, enters the room, walks up and peers into screen number 2, giving the impression that they are standing right next to you and similarly engaging with the work. Alternatively, a virtual character may walk in and directly address the audience member at screen number 1, and so forth.

Figure 8   *Dislocation,* view of screen space, virtual character (rear) audience (at screen), Melbourne Australia

These virtual characters form the substance of the mixed reality. They not only provide the initial illusory shift, but are also responsible for sustained audience engagement through the creation of emotionally compelling situations and the construction of narratives.

Based upon my observations during numerous public presentations of *Dislocation*, audience interaction with the work commonly results in the following responses.

The first and most basic response is the viewer interacting with their own reflection, their presence in the screens. Even in the absence of any manipulation of the image, viewers find this in itself compelling. When multiple individuals are present, the mediated experience is often transformed into a performance platform. The minor shift in visual perspective is enough to provide the audience with 'a wayward loop of consciousness through which one's own image of one's self and one's relationship to the world can be examined, questioned and transformed [Rokeby 1996].

The second layer of interaction inherent in the work is between the viewer and virtual characters present in the environment. This takes several forms. Initially there is a fleeting moment when, upon seeing that a character appears in the space and hearing their movements within the room, the illusion is perceived as reality.

Observation of user responses indicate a significant proportion of individuals doing a 'double take' at this moment, looking at the inset screens, turning around to clarify their reference of reality and then returning their gaze to the screens to verify what they think they saw. An interesting twist on this moment effectively took the form of a 'triple take' whereby a character would enter, the viewer would establish that they were a virtual entity within the space and continue to view sequential scenarios as they played out. Another audience member would walk in to the space and the initial viewer would think they were in fact another virtual character, only to be even further astonished when turning around and seeing a physical form behind them.

Figure 9   *Dislocation,* view of screen space, virtual character directly addressing an audience member,
            Tokyo Japan

It was initially envisaged that the more psychologically intense scenarios, such as direct violent confrontation with the viewer would have the most significant emotional impact. It became evident, however, that this was often not the case. The scenarios that are most effective are often the incidental passive situations. These are primarily based upon

character's activities that occur within the space, but often had no direct link to the presence of individual viewers within the environment. In these instances, scenarios such as virtual gallery visitors entering and leaving the installation, virtual characters walking into the space to have their mobile phones ring, and other banal aspects of everyday life provide some of the most pronounced effects on the audience. The sheer normalcy of the situation makes the illusion more tangible and persuasive.

Figure 10   *Dislocation,* view of screen space (virtual character on phone), Tokyo Japan

A clear distinction became apparent between single user and group behaviour within the installation. Although the initial illusion achieves the same impact upon individuals and groups, subsequent activity differed considerably. Individuals are much more likely to focus on the virtual characters, remaining at the screens as the various scenarios transpire. After the initial disbelief, the work is experienced more like an unconventional form of cinema. When two or more individuals are present there is considerably more interaction between virtual characters and humans alike. Audience members, mediated through the screen-based environment become more playful and performative. The visual displays provide a novel medium for viewers to stage their own undertakings. Viewers use the unusual visual perspective to run, jump, dance, kick, hug, and display nearly every other form of human exchange with their virtual counterparts. Even in the absence of additional virtual content, *Dislocation* provides a framework that is unorthodox enough to generate unexpected social

interactions. Because of the playful and performative potential of the space, engagement and interaction are sustained after the initial illusion has faded. The introduction of virtual characters into the environment shifts the initial interactions between the viewers by effectively providing additional playmates for the audience to interweave into their own personal narratives. Individuals leave the screens for closer interchange with the characters while other viewers watch on as the performance unfolds.

> I watched people dissolve in delight over and over again, drag in unsuspecting companions and relish the moment of being duped. Even after this moment of realisation, the images of the ghostly others occasionally behaving in inappropriate ways remains compelling. The small audience shivers at each new arrival like ouija board conspirators.
> [Muller 2005]

Dislocation's capacity to sustain audience interest beyond the primary illusion also lies in the anticipation of what will unfold. Viewers savour the momentary loss of control over the world they inhabit and the ongoing tension of the unexpected.

Figure 11   *Dislocation*, audience member interacting with virtual character positioned at left screen, Sydney Australia

This section has outlined key design approaches undertaken during the development of *Dislocation* and indicated the significant outcomes of audience interaction with both real and virtual characters. Many of the production techniques developed during the process of completing *Dislocation* were directly employed in *The Black Box Sessions*. Equally as influential to the works in this thesis was the manner in which audiences responded to particular scenarios. Even though all my works are produced in a speculative mode, this is particularly the case with *Dislocation*. The wide range of scenarios devised was akin to throwing a net out and then seeing what unexpected jumble is reeled in. Sorting through the haul, in this instance, what characteristics of the virtual characters proved to be effective, directly informed the overall manner in which computer agents were approached in *The Black Box Sessions* and *Häusliches Glück*. Knowledge gained though this process, in addition to a detailed analysis of the effectiveness of conjuring illusions sets the scene for the subsequent works undertaken in this thesis.

1.3 Structural overview

Chapter 1 of this thesis presents an overview of the research problem, outlines the methodology of practice based research as a framework for the investigations, provides a discussion of background research by the author that informed the two practice based works developed as part of this thesis, and gives a structural overview of the thesis.

Chapter 2 provides a foundation to the approaches that magicians employ to deceive audiences. In doing so, a selection of these principles are identified as being relevant to the two research artworks and these are examined in detail. The practical application of these elements of misdirection are discussed through the analysis of a conjuring illusion. The chapter continues by examining how the interpretation of illusion is shaped by its framing context and concludes with a discussion regarding the how particular formal and content characteristics are exploited to deceive audiences across a spectrum of different media.

Chapter 3 outlines overarching approaches to the mechanics of the mixed reality illusions that are employed across both practice based works *The Black Box Sessions* and *Häusliches Glück*, the specifics of which are outlined in each work's respective chapters.

Chapter 4 introduces the first work developed in conjunction with this thesis, *The Black Box Sessions*. It goes on to demonstrate how the key methods of illusion outlined in Chapter 2 have been re-interpreted and applied within a mixed reality environment. It reflects on the successes and failures of the design and proposes alternate approaches.

Chapter 5 presents the second practice-based project submitted in conjunction with this thesis, *Häusliches Glück*. Similarly to Chapter 4, it reflects on the concepts and techniques used to create the work, their relationship with methods from conjuring, and how this approach examines a different set of concerns to those present in *The Black Box Sessions*.

Chapter 6 presents a summary of the outcomes and contributions of the research.

Chapter 2: Magic and Illusion

2.1 Introduction

This chapter identifies the principles of magic that can be effectively applied in the context of mixed reality installation to advance perceptual and social realism. It describes how these principles are utilised within a conjuring illusion presented by Jean Eugène Robert-Houdin and discusses how the manner in which these principles are put into service significantly influences the interpretation of the result as reality or as fiction. The chapter concludes with an investigation of the various means of establishing false framing contexts and demonstrates how they have been accomplished in a range of artistic practice spanning photography, radio, cinema, locative media and installation.

2.2 The principles of Magic

Conjuring consists of 'creating illusions of the impossible' [Nelms 1969] which are comprised of a method (how the trick is achieved) and an effect (what the audience perceives) [7]. A successful magic trick requires that the audience experience the effect while being unaware of the method [Lamont & Wiseman 1999]. Examining the creation of illusions in terms of method and effect is not only applicable to conjuring but also resonates with all forms of media that rely on suspension of disbelief. For example, in the context of cinema, the audience should be engaged with the content on screen but not the presentation apparatus. In virtual environments the aim of the developer is also generally to ensure that the user experiences the effect (immersion in the virtual world) while suppressing awareness of the medium (method).

When examining these concepts in the context of the mixed reality installations presented in conjunction with this thesis, the *method* can be interpreted as the design of the installation environment and the *effect* is the illusion of a virtual human presence (not the

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[7]   It is beyond the scope of this thesis to discuss the countless methods magicians employ to achieve equally countless effects. Rather, this thesis is concerned with overarching conjuring approaches to illusion and, specifically, how these relate to media arts. For a broad perspective of conjuring methods see [Fitzkee 1944] [Arnold & Cahill 1857; Dunninger 1970; Hopkins 1897; Wonder & Minch 1996]. For a concise summary of the different classifications of conjuring effects refer to [Lamont & Wiseman 1999].

climax to a trick that presents the audience with a situation that is incompatible with their world view, as in the case of magic).

The method in which the conjurer pursues an effect can be further examined in terms of mechanics and showmanship [Lokuge 1995]. Mechanics consist of the trick elements of the effect such as physical devices whilst showmanship (and more specifically misdirection) encompasses the vast myriad of psychological expedients used by magicians to deceive the spectator whilst employing the mechanics. There is a general consensus by theorists of magic that the *mechanics* of an illusion are secondary to the importance of *psychological deception*. The ability to deceive the audience through psychological manipulation is central to a successful magic trick. Indeed Nelms posits 'the art of illusion is at least 95% applied psychology' while Fitzkee contends that 'psychological principles of deception are more important than the mechanics of physical deception because they are much more effective. They are subtle. They rely on powerful principles. They are insidious, irresistible' [Fitzkee 1975: 39].

The range of psychological and physical tools in the magician's arsenal are commonly described under the umbrella term *misdirection*. While magicians hold varying opinions as to scope of the term, Lamont and Wiseman succinctly summarize misdirection as 'that which directs the audience towards the effect and away from the method' [Lamont & Wiseman 1999: 31]. Rather than simply conceal the trick elements of an effect, attention must be similarly drawn towards other salient elements in the act so that a coherent and logical flow is achieved culminating in the illusion.

The seminal texts by Lamont & Wiseman [1999], Fitzkee [1975] and Nelms [1969], indicate the breadth and complexity of misdirection employed by conjurers. While there are resonances between illusion in mixed reality and nearly all conjuring methods, for the purposes of this thesis I have identified the following principles that are specifically relevant to the creation of the realistic simulations demonstrated in *The Black Box Sessions* and *Häusliches Glück:* framing context, consistency, continuity, conviction, justification, surprise and disguise. These principles fall into what Lamont and Wiseman categorise as psychological misdirection which is aimed at directing the spectator's suspicion. This form of misdirection is the primary focus of the works presented within this thesis. To a lesser degree, physical misdirection is also examined, a technique used to direct the spectator's attention. Physical misdirection includes contrast, novelty, movement and gaze etc. [Lamont & Wiseman 1999].

For the purpose of examining misdirection in the domain of mixed reality, the actions of a magician can be substituted by the properties of the environment. . For instance, the naturalness of a magician's movement within a conjuring trick can be applied to naturalness of the environment, its objects and agents within mixed realities. Similarly, these parallels can be readily applied to the virtual characters present within the environment and their behaviour.

Although both works apply all these techniques in varying degrees, certain principles are more relevant to the particular aims of each work. The central aim of *The Black Box Sessions* was to create perceptively real characters within a highly controlled augmented reality space. *Häusliches Glück* was designed to extend this concept of illusion to encompass more expansive narrative scenarios and compound framing contexts. This was achieved via a multi-room environment enhanced with technology.

2.2.1 Framing context

> If a painting were to fall off your wall you might think it unremarkable. You might wonder
> if a nail rusted or a wire snapped. You would repair it and forget it the following day. But if
> a medium were conducting a séance in your home at the precise moment, that painting
> would change your life. The medium directs your attention, defines the importance of the
> occurrence and grounds it in a specific reality.
> [Steinmeyer 2006: 38]

Steinmayer's example sheds light on how the context of an event dramatically shapes our perceptions of it. Framing refers to the 'process by which a spectator uses abstract structures to define a situation' [Lamont & Wiseman 1999: 104]. Framing contexts and more specifically the development of false frames is in many respects the cornerstone of any substantial illusion.[8] For this reason considerable discussion is dedicated to this subject in the following chapters due to its ability to influence an audience's interpretation of an event.

Magician and scholar Henning Nelms contends that 'logic requires a frame of reference or context. A successful conjuring theme baffles logic by providing a false frame

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[8]   A conjuring illusion differs from a simple trick in that it can be executed irrespective of any surrounding narrative, i.e producing a coin from a seemingly empty hand via a sleight. Nelms proposes that a trick challenges the audience to discover the workings whilst an illusion actually convinces the audience [Nelms 1969].

of reference [Nelms 1969: 196].' Fabricated motivations and explanations mislead an audience from the true nature of the deception resulting in an 'alternate interpretation of the events that are unfolding [Marshall, Benford et al.: 9].' They lead the audience along one thematic path while the deception occurs undetected on a separate parallel trajectory simultaneously constructed by the magician.

Magicians routinely exploit the inability of an audience to correctly interpret an event due to assumptions related to the proposed theme. Macknik asserts that what you 'see, hear, feel, and think is based on what you expect to see, hear, feel, and think. In turn your expectations are based on all your prior experiences and memories [Macknik, Martinez-Conde et al. 2010: 8].' The context in which a conjuring illusion is presented anchors these expectations within a false framework and establishes bounds in which the audience will interpret the resulting illusion.

Framing contexts in magic can therefore be broadly seen as a means to develop an appropriate atmosphere for the effect to take place, stimulating audience interest and assisting in the believability of the resulting illusion [Lokuge 1995]. Conventionally, the conjurer will make a claim for some extraordinary power, and the resulting illusion will demonstrate this claim. For instance, in the *Sawing a Woman in Half* illusion, the magician claims the ability to sever the subject in two before the audience's eyes, yet the woman appears miraculously unscathed when the illusion concludes.

Figure 12   *Sawing a Woman in Half* illusion

P.T. Selbit, one of the early exponents of the illusion, added drama to the final effect by periodically pouring buckets of simulated blood into the gutter outside the theatre. He further ensured that the audience was not predisposed to assume that the process was a trick by issuing the following instruction to theatre managers:

> Important. Sawing a Woman in Half actually transpires in full view of the audience. They are shown the two separate parts of the woman in plain view. Therefore, please, at no time in your press material, billing, slides or other publicity refer to it as 'an illusion'. By doing so you merely take away from its sensational value [Steinmeyer 2006: 91].

When audiences witnessed Selbit performing the illusion on stage, they were presented with an ambiguous context in which to interpret the work, one hinting at reality however simultaneously delivered by the hands of a magician.

The use of false frames further hinders an audience's ability to reconstruct the illusion thereby aiding concealment of the method. Using false frames to mask the true nature of the event is so effective that magicians routinely fool their colleagues via this process.

You don't want the magicians to be able to reconstruct it [the effect]. So in the course of it, the other magician is not only being fooled by the physical deception, but made to think that something might have happened which did not happen, and if you thought that, you could never reconstruct how the effect was done.

(Ricky Jay quoted in [Morris 2009])

The following conjuring example conveyed by magician Adam Mada demonstrates in detail how false framing is successfully employed in practice[9].

The magician begins with a discussion on the concept of free will in society and posits that this is indeed a fallacy. He cites several examples from everyday life in which suggestion in advertising or environmental stimuli coerce individuals into making unconscious decisions against their free will. As this discussion with an audience member continues, he places a box on the table and removes five cards and a poker chip. Placing each card face up in a line on the table, he names each suit and subtly emphasizes the fourth card in the sequence. The magician asks if you believe in free will, and states if you can successfully demonstrate your position by selecting one of the five cards you will receive $50. He slides the gambling chip forwards saying that you should place the chip beneath the card of your choosing and, as he executes this move, emphasis is similarly placed towards the fourth card during the movement. The audience member places the poker chip beneath their chosen card. The magician asks if that is the final choice and enquires if they would like to change it. This affirms that the choice is clearly their own and they seemingly have the ability to freely choose again should they wish to do so[10]. Once it is established that the card is final, the audience member is instructed to flip the poker chip over. Written on the back is the name of the very same card that the audience member has chosen.

The illusion works by employing the process of *multiple outs* in which any choice the audience member makes can be represented as being predetermined by the magician. For instance, each of the five cards is covered by the range of props present during the trick, the name of the first card is written underneath the card box on the table, the second card rolled up within the $50 note, the third card on the back of the card itself and so on. If the third card is selected, the magician instructs the audience member to turn the other cards

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[9]   Interviewed by the author in Sydney, Australia 01/08/2011.
[10]   Mada notes that providing this choice increases the strength of the illusion as you will never change your mind. By doing so, you are 'devaluing what you feel as your own free choice'.

over and finally their selection, which would state 'You chose me'. The dramatic effect is therefore catered for in every selection outcome.

The revelation suggests that either the magician has psychic ability - and is able to predict the card - or has succeeded in influencing the spectator's choice through suggestion. Logic dictates that the most plausible answer is the latter and therefore the false frame succeeds by diverting audience attention from the deception.

Central to the success of the illusion is the ability of the magician to mislead the audience into thinking that the outcome is achieved through the process of suggestion, not the actual solution of multiple outs. The final illusion is framed as a demonstration of sophisticated (and truly baffling) psychological manipulation. The thematic discussion at the beginning of the illusion begins to lead the audience along this path, the magician's subtle emphasis on the fourth card through verbal and physical cues adds to this. If the audience members perceive these cues, and they select another card intentionally to avoid suggestion, the outcome is even more miraculous.

As the whole selection process is undertaken by the audience member, the illusion of free choice is heightened. Similarly the process of 'the reveal' is handled by the spectator. This gives the impression that they are in control the whole time, thereby reducing suspicion and increasing the dramatic impact of the effect.

The audience cannot possibly comprehend that there are multiple solutions to the puzzle, as they are only aware of a single outcome, i.e., the solution only existed on the back of the single poker chip. Framing as psychological coercion further clouds the audience's ability to perceive the other solutions that literally have been in front of them the whole time. As these objects are present in plain sight from the commencement of the illusion, suspicion is further reduced.

Constructing false frames is not only effective in the context of conjuring illusions but also a necessity in re-framing audience experience in media arts if deception is to contribute to the desired illusion. Audiences conventionally experience artworks in gallery contexts as just that; they expect to experience a particular work in a particular medium. When audiences experience a mixed reality work, they would naturally assume it would comprise of virtual elements interwoven with reality. As the central concern of the research is to present the virtual characters as being both perceptively and socially real, false framing is critical for the success of the illusion. Without the development of false frames, the

artworks presented in this thesis would be interpreted as mixed reality installations portraying simulated characters.

This framing is akin to the experience of cinema in which the 'overt framing of the film viewing event; on a screen in a theatre, and so forth' [Anderson 1996: 123] literally and metaphorically frames the event as a simulation (even though the content characteristics may be representative of reality in the instance of documentary). Although mixed reality content may achieve a sufficient level of perceptual and social realism to deceive the audience, the content would nevertheless be regarded as a simulation, and as in cinema, would rely on the audience to willingly suspend disbelief.

If conversely the mixed reality experience is successfully reframed as reality, and the media and content support this perception, at a cognitive level the audience is not constantly reminded of the deceptive underpinnings 'through the push-pull in and out of the illusion of reality' [Anderson 1996: 123] evident in cinema. The reframed mediated experience more-or-less becomes their reality, no longer a bounded illusion.

The manner in which a work is framed additionally aids in supporting the mechanics of the illusion by presenting a logical and coherent structure for those devices to exist within. For instance, if the audience is led to believe that they are going to experience live performers via Closed Circuit Television cameras (CCTV) and display systems - as in the instance of *The Black Box Sessions* - the presence of these devices is consistent with that context, even though their true purpose is providing the necessary means to present the perceptual illusion.

2.2.2 Consistency

Consistency is concerned with actions that appear natural and are perceived as normal due to familiarity and appropriateness to context [Lamont & Wiseman 1999] and is 'essential to any suspension of disbelief. No conviction is so deep that it cannot be destroyed by a discrepancy in presentation [Nelms 1969: 132].' This is clearly illustrated by the following example of the 'French drop vanish'–a technique where a ball is seemingly transferred from the performer's left hand to the right, but, in fact, remains in the left hand.

> The capable magician will perform the apparent taking of the ball *exactly* as he would if he were actually taking the ball. He would not put stress on the sleight. He would give but

casual - and passing – attention to his left hand. His eyes would rest momentarily upon the ball as he reached for it. Then his eyes would follow the right hand, follow it naturally, convincingly, still casually, just as they would had he actually seized the ball from his right. The words he would use – and his posture as well – would be exactly the same as they would be had he carried the ball away from the left. Also, the fingers of the left would relax naturally. They would relax, as would the arm, as if the hand were actually empty.
[Fitzkee 1975: 37]

Although this single action occurs in a fleeting moment a wide range of concurrent elements must be harmoniously executed for the sleight to be effective. All of these processes are perceived by the audience as familiar and natural and therefore do not draw attention to the process of deception. They are consistent in the audience's view of what passing a ball from one hand to the other would look like.

Consistent actions should also appear necessary, i.e. the motivations of the action should not be interpreted as incongruous given the context, and uniform; if a process is approached in a distinctly different manner than previously demonstrated, this will arouse suspicion. [Lamont & Wiseman 1999]. The ball pass would therefore require a plausible reason to be deemed necessary and uniformity could be established prior to the sleight by actually passing the ball from hand to hand in the same manner that is used during the simulation.

Consistency can also be examined in regards to the actions of a character within a specified context. These actions must be consistent with one another, necessary, and have appropriate motivations [Nelms 1969]. Beyond conjuring, the concept of consistency has been demonstrated as a central pillar of character development within cinema [McKee 1999] and as holding equal importance in the treatment of avatars within virtual environments [Nijholt 2006]. In these instances a character's behaviour must be in keeping with their projected personalities when responding to an external force.

In the development of mixed realities, consistency can be used to direct the formal characteristics of the illusion (the mechanics) so that the treatment of technology or other relevant devices used to establish the illusion is familiar, consistent with audience's expectations, appropriate in the context presented, and logically appears necessary to view the mediated content. Addressing these factors suppresses the significance of these devices in the experience and their role in deception.

The character traits of computer agents experienced through these technologies should similarly follow these principles of consistency in order to achieve believable simulations of their real world counterparts.

2.2.3 Continuity

Continuity in a magic act is the arrangement of dramatic elements to lead the audience along a specified path while at the same time relieving the spectators of mental effort. By making each step clear, and transitions easy and natural, the magician ensures that the audience's interest is maintained and therefore receptive to the illusion [Nelms 1969]. Tommy Wonder concludes that it is essential magicians present their work 'in a clear and efficient way if it is to be effective' [Wonder & Minch 1996: 14]. Continuity further ensures that the audience do not miss any key elements of an act that are necessary for the illusion to succeed. For example, if a key aspect of the illusion's narrative is missed, the culminating effect, comprised of sequential elements, will not make sense. The magician's purpose of employing continuity shares similar concerns with media developers working in cinema or media arts. On a basic level continuity in both conjuring and media such as cinema and virtual environments is employed to avoid disruptive fractures in the experience, thereby reducing the sense of presence in media or effect in magic. Cinema relies on continuity in which cinematography, editing techniques and sound design all contribute to the overall sense of 'maintaining a continuous, coherent flow of content or narrative' [Marsh, Nitsche et al. 2008: 1]. These techniques are used to contribute to the sense that the medium is transparent.

Within virtual environments, continuity aids in sustaining audience engagement with the work. Merely drawing the viewer into the world of the screen is not enough if they cannot be maintained there. Rather than just 'Being There' in relation to the sense of presence, the goal is to 'Stay There'. Marsh argues that 'transparency and continuity of mediated environment use helps users to stay there and induce experience' [Marsh 2003b: 86] as he claims 'one of the goals of interactive media environment use is for users to stay focussed, interacting in the illusion' [Marsh 2003a: 2].

2.2.4 Conviction

Lamont and Wiseman contend that 'for an effect to have maximum impact on a spectator he should have maximum conviction about the significant elements of the effect'

[Lamont & Wiseman 1999: 63]. Successful showmanship on the magician's part ensures that the audience is emotionally engaged with the proceedings and 'become involved and experience the event rather than observe it' [Lamont & Wiseman 1999: 67]. In addition to the development of an emotionally compelling act through drama and atmosphere conviction further aids in deception by reducing suspicion [Lamont & Wiseman 1999] and by distracting the spectator who 'when enthralled by an act is not actively trying to see through the deceptions' [Nelms 1969: 27].

While deception enables the successful execution of trick elements, drama and atmosphere created through showmanship add meaning to the act thus resulting in a far more compelling illusion than if the trick was presented alone. To highlight this Nelms refers to the 'bullet catch trick' presented by Robert-Houdin.

> Stage bullet-catching is a trick. It makes the audience wonder how it is done, but does not persuade anyone momentarily, that the performer's magic renders him invulnerable to rifle fire. Robert-Houdin, on the other hand, created an illusion. He persuaded his audience that no bullet could harm him.
> [Nelms 1969: 4]

The development of apparent realism within a magic act is founded on many of the same principles attributed to fostering suspension of disbelief in cinema, theatre and performance. For example, in cinema, McKee proposes that the nature of presentation is critical when he states 'given the choice between trivial material brilliantly told versus profound material badly told, the audience will always choose the trivial told brilliantly' [McKee 1999]. This position is supported by Marsh who similarly suggests that 'if the content in virtual environments is uninspiring, dull or boring to interact with/within, it has the potential to break users' attention' [Marsh 2001: 2].

Drama and atmosphere in mixed realities can draw on the very same techniques used in conjuring, cinema, theatre and performance. Atmosphere is created through context, lighting, sound and narrative. Compelling performances can be presented by computer agents rather than their human counterparts on the stage.

So while successful deception results in unquestioning belief, conviction only requires suspension of disbelief, and, although completely illogical, this can be profoundly evocative.

Everyone is aware that a leading lady on Broadway receives a salary which puts her in the upper tax brackets. Nevertheless, this knowledge does not keep audiences from sobbing over her poverty when she impersonates a homeless waif.

[Nelms 1969: 2]

2.2.5 Justification

Justification is a technique employed to reduce suspicion by making seemingly inconsistent actions appear necessary, or unnatural actions appear natural, [Lamont & Wiseman 1999]. Fitzkee states that 'as long as there is a logical, perfectly natural reason for what the magician *seems* to be doing, there can be no suspicion' [Fitzkee 1975: 58]. One method in which justification can be achieved is through the process of familiarisation in which an inconsistent action is made to appear consistent. For example a coin is passed back and forward between the hands prior to a false transfer. Lamont and Wiseman claim that 'this is done to familiarize the spectator with the actions of the false transfer. A norm is thereby established. As the false transfer is consistent with the genuine transfers (uniformity), it is less suspicious [Lamont & Wiseman 1999: 60].'

Another method used to justify inconsistent actions is the ruse. Fitzkee defines a ruse as 'disguising an essential move which cannot be concealed' [Fitzkee 1975: 158]. Rather than disguising an object, the ruse is used to disguise a *purpose*. Lamont and Wiseman cite a classic example of a ruse being the use of 'magic dust' to make an item vanish. The performer reaches into the pocket to grab the dust whilst at the same time disposes of the palmed object. It 'gives a reason (that is part of the effect) for the hand going to the pocket (that is part of the method)' [Lamont & Wiseman 1999: 61].

In the context of mixed reality, the actions of the magician that require justification can once again be examined in terms of the elements of the environment and behaviour of virtual characters. For instance, technologies necessary to present an illusion, but would otherwise appear incongruous within the environment can be employed without suspicion through the use of a ruse. Similarly the presence or actions of a virtual character can be justified through familiarisation and ruse to offer appropriate motivations and context for the event to logically occur.

2.2.6 Surprise

Surprise in a conjuring illusion occurs when the framing context is disrupted and an alternate reality is revealed. It is a key aspect of the climax of a conjuring effect. Although the primary purpose of the works in this thesis is not to reveal an alternate reality, but rather sustain deception within the illusion, surprise still occurs throughout the works often resulting from the ambiguous and shifting nature of the illusion. This occurs when audience experience shifts from one framed as reality, to an experience framed as a perceptual illusion. This effect therefore varies between each work based on their specific design characteristics and similarly between each individual's experiences of the mediated environments. For example, many individuals left the gallery after experiencing *The Black Box Sessions* believing that all the events that unfolded were in fact real, not a simulation. In this instance an alternate reality was never revealed.

Surprise is also utilized as a dramatic device in the works as a means of maintaining audience engagement. This state may be caused when the audience is presented with unexpected elements based on their preconceived notions or lack of understanding as to what the experience might entail, or initiated through the actions of virtual characters with whom they interact.

2.2.7 Disguise

All methods employed by magicians are fundamentally concerned with disguise, be it disguise in the sense of a psychological device or disguise in the sense of a physical act such as attention control. Fitzkee remarks:

> Things are disguised. Actions are disguised. Reasons are disguised. Results are disguised. Objectives are disguised. Manoeuvres are disguised. Everywhere you look in connection with deception -be it performer, apparatus, movements or what not - one encounters disguise in some form.
> [Fitzkee 1975: 117]

Although disguise is the overarching concern of all conjuring deceptions, in the context of this thesis disguise is more specifically examined in terms of the illusion's mechanics; the act of making one thing appear similar to something else or by hiding it in or behind something else.

To revisit the *Sawing a Woman in Half* illusion, one such example of disguise in the act is the concealment of two individuals in box cavities. One individual forms the upper half of the body, whilst the other represents the lower half. Both can remain animated throughout the whole ghastly process giving the appearance that each element belongs to one unfortunate person.

Rather than hiding something within an object, as in the above example, another approach to disguise in magic is 'Black Art' which exploits contrast in visual perception so that black stage elements are rendered invisible when presented against a black background [Macknik, Martinez-Conde et al. 2010].

Disguise is employed within the mixed reality environment to conceal necessary elements of the mechanics of an illusion that cannot be justified within the framing context. For instance, the visibility of technology that reveals the underlying operation of the illusion. Disguise is also employed within the formal characteristics of the media such as visual compositing techniques used to present the illusion that virtual characters co-exist in physical space with the audience.

2.3 Misdirection in Practice

Jean Eugène Robert-Houdin was a master conjurer now widely acknowledged as being the forefather of modern magic. The following example demonstrates conjuring techniques outside of the conventional context of entertainment:

> In 1856, French North Africa was as disturbed as it is today. However, the agitators were not communists but marabouts - Mohammedan fanatics who worked the Arabian mobs into superstitious frenzy by pretending to possess magical powers. The French government displayed imagination almost unique in official circles and sent a conjurer, Robert-Houdin, to discredit the marabouts by outdoing their magic. One of Robert-Houdin's feats is probably the most perfect example of conjuring ever performed.
>
> The marabouts had a trick which apparently proved that no pistol aimed at them would fire. The French conjurer countered by letting a marabout shoot him and catching the bullet in an apple stuck on the point of a knife. However, Robert-Houdin had announced publically that his 'magic' consisted entirely of tricks and the shrewder marabouts guessed that his bullet-catching feat could be performed only with his gun.

Some time later, while the Frenchman was stopping in a native village, a marabout drew two pistols from his burnoose and challenged Robert-Houdin to a dual in which the marabout claimed the right to the first shot! Rober-Houdin protested but finally agreed to fight the duel under the marabout's conditions at eight o' clock the following morning.

The meeting took place in an open square surrounded by whitewashed buildings. The square was packed with Arabs who hoped to see the Frenchman killed. The marabout produced his pistols which he loaded with powder. He offered Robert Houdin a handful of bullets. The Frenchman chose two, dropped them into the weapons, covered them with paper wads, and thrust them into the barrels with a ramrod.

The marabout had watched every step and felt sure that his adversary could not escape. He took careful aim and pulled the trigger. Robert-Houdin smiled - and displayed the bullet between his teeth.

The marabout tried to seize the other pistol, but the French conjurer held him off, saying 'you could not injure me, but you shall see that my skill is more dangerous than yours. Watch!'

He fired at the nearest wall. Whitewash flew. Where the bullet had struck, a gout of blood appeared and dripped down the masonry.
[Nelms 1969: 1]

The night before the duel, Robert-Houdin cast two bullets in a mould by combining wax with lampblack (soot) obtained from a candle. Leaving one of the bullets hollow, he drew blood from his thumb and filled it. During the duel he exchanged the real bullets for the wax counterparts and, upon loading the false bullet in the marabout's gun, crushed the wax in the process so it could not injure him.. The wax bullet containing blood was lightly loaded into his own pistol so as to only disintegrate when striking the wall [Robert-Houdin 1860].

Let us examine Robert-Houdin's illusion in terms of conjuring. The trick elements of the illusion are relatively few, simply an exchange of bullets by sleight of hand.[11] The final

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[11] Although the trick elements of the illusion are scant, they are of great importance due to the inherent risk involved. Nelms remarks that although the stage bullet catch is a trick , it is in fact extremely dangerous with at least ten performers killed and twice that number injured in non fatal accidents [Nelms 1969].

dramatic illusion is achieved, however, through the complex interplay of misdirection and showmanship.

Robert-Houdin's second illusion discussed by Nelms is framed as a combative duel. His opponent and the audience therefore believe that his demise is imminent. This is in contrast to the initial bullet catch illusion that Robert-Houdin clearly frames as being entirely founded on tricks. This first trick is contrasted against the context in which the marabouts portray their illusions as being founded on supernatural ability. Robert-Houdin's concluding illusion is framed as reality and similarly demonstrates supernatural ability. This short passage provides insight into the possible framing contexts in which the single bullet catch illusion may be interpreted: supernatural ability founded in reality and simply entertainment.[12]

Disguise is central to all of Robert-Houdin's actions in executing the sleight in which the bullet was exchanged for the wax counterpart. Robert Houdin combined soot from a candle with wax to disguise the bullets by 'imitating the latter's external identifying indications such as characteristics, marks, symbols and other signs' [Fitzkee 1975: 65]. The bullets therefore appeared to be consistent with audience's expectations of a bullet's appearance in that era as Robert-Houdin states: 'Bullets thus prepared bear and extraordinary resemblance to lead, and are easily mistaken for that metal when seen at a short distance off' [Robert-Houdin 1860: 320]. To reduce suspicion, the wax bullets would have been handled in a manner consistent to their lead counterparts. Neither a ruse nor familiarisation was required when loading the gun and crushing the wax bullets as this action would already be interpreted as consistent with the process of loading real bullets into the real gun. The manner in which this sequence of events occurred provided the audience with logical continuity while Robert-Houdin's outstanding showmanship convinced the audience that the duel was real, a duel to the death that provided ample drama to keep the audience engaged. Surprise occurs when the context in which the event

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[12] In addition to the *Bullet Catch* trick, another feat that Robert-Houdin performed during the same trip to Algeria was the *Light and Heavy Chest* illusion (discussed in Chapter 1). Rather than framing the effect as an illusion, it was presented as an example of supernatural ability as Robert-Houdin indicates 'from what you have witnessed, you will attribute a supernatural power to me, and you are right. I will give you a new proof of my marvelous authority, by showing that I can deprive the most powerful man of his strength and restore it at my will' [Robert-Houdin 1860: 296]. After the initial terror that resulted from these spectacles, he eventually revealed the benign underpinnings of the illusions: 'The blow was struck: henceforth the interpreters and all those who had dealings with the Arabs received orders to make them understand that my pretended miracles were only the result of skill, inspired and guided by an art called prestidigitation, in no way connected with sorcery. The Arabs doubtless yielded to these arguments, for henceforth I was on the most friendly terms with them [Robert-Houdin 1860: 301].'

was framed is disrupted. The first occurrence is when Robert-Houdin is shot and seemingly impervious to bullets. The second climax occurs when, through supernatural powers, his bullets violate the audience's preconceived notions about the properties of bricks and mortar when it 'bleeds'. Both of these events are diametrically opposed to audience expectations of reality. All along, Robert-Houdin followed one sequence of events advancing the internal narrative of the illusion while simultaneously the audience perceived an entirely different sequence occurring. The goal of directing the audience 'away from the real explanation of a trick towards a false interpretation of events' [Marshall, Benford et al. 2010: 6] was seamlessly executed.

Whilst mechanics play a crucial role, it is clear that the psychological elements of misdirection and showmanship are central to the overall illusion. The following section explores how the manner in which these events are framed shifts the nature of the deception.

2.4   Contexts of Illusion

This chapter has outlined a range of principles that magicians routinely use to induce a false belief so that they can portray events that are incompatible with the audience's worldview. How the use of these principles is framed, however, greatly determines the nature of deception. Framing contexts therefore not only influence the successful execution of an illusion (as previously discussed) but also the broader interpretation of the illusion itself.

For the purpose of understanding how framing contexts inform illusions it is important to make a distinction between deception framed as a conjuring trick and deception framed as reality. It is the latter that forms the foundational practices of pseudo-psychics and spiritualists. Both approaches employ precisely the same methods to achieve distinctly different ends. Because of this commonality, professional magicians have sought to expose charlatans throughout history.[13] Nelms makes this ethical distinction clear when he states. 'We should deceive our audiences about our devices but merely convince them

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[13]   Houdini for example spent a great deal of his life dedicated to the exposure of spiritualists [Houdini, Gibson et al. 1953] as have prominent magicians James Randi and Penn and Teller in recent times [JREF 2011: Price, 2003].

about the supernormal powers we imitate. The deception should be permanent; the conviction should never be more than temporary [Nelms 1969: 35][14].'

Triplett poses that all deceptions can be divided into two categories: 'serious deceptions or those in which some form of selfishness appears' and 'deceptions of play' [Triplett 1900: 440]. The chicanery of pseudo-psychics falls into the first category, while the practices of magicians, and similarly, this research, fall into the second; they are aimed as *entertainment*. While the aim of the artworks is not to present psychic phenomena, they do however conform to the deceptive approaches of psychics or mentalists in order to portray an authentic effect.

There are many ways an individual may interpret an illusion, all of which exploit the processes of misdirection. At one end of the spectrum are magicians who make no claim to authenticity, then there are the practices of mentalists who blur the boundaries of truth and artifice, and finally at the other extreme, pseudo-psychics and spiritualists whose claims are portrayed as truths. Pankratz describes this factual position as double deception; illustrating the concept with an example of Uri Geller's spoon bending in which 'he used a deception to bend keys, and he deceived people by failing to inform them that he did it by trickery' [Pankratz 1987: 1].

Notable magician and sceptic James Randi asserts that 'mentalism deals with things that are apparently extrasensory, precognition, divination of various kinds, but it's all a form of conjuring' [Macknik, Martinez-Conde et al.: 144]. So while precisely the same methods of conjuring are used, the manner in which many of these acts are performed presents varying degrees of ambiguity as to whether the feat is real or trickery. Osterlind therefore contends mentalists 'portray themselves as real and their performances are often accepted as such' [Osterlind 2005: 59].

In order to promote a factual interpretation of these events, both mentalists and pseudo-psychics (whose feats are conceptually similar to conjuring tricks [Lamont & Wiseman 1999]), must distinguish themselves from magicians. They use a range of approaches that contribute to enhancing the believability of the resulting effect, and reducing suspicion that the method could very well be achieved by methods of magic. For example, the pseudo psychic may divert construction of the effect from themselves to

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[14]   Although the artworks in this thesis have the capacity to permanently deceive individuals, particularly in the instance of *The Black Box Sessions*, the nature of the deception is no more sinister than the audience considering the simulation is a live theatrical production.

other forces, i.e. they are merely a medium for spirits and may appear equally as surprised by the outcome as the audience [Lamont & Wiseman 1999]. Similarly Maurice Fogel, a professional mentalist suggests that mixing traditional magic and mentalism in an act is detrimental as the audience is aware that magic involves trickery, therefore the mentalism performed would be viewed as just another form of trickery; the 'spectators would "frame" the event as a conjuring trick rather than an example of psychic ability' [Lamont & Wiseman 1999: 103].[15] Indeed, by not being associated with magic, the works in this thesis and the activities of pseudo psychics and mentalists have in many respects far greater capacity to use misdirection to develop convincing illusions as, unlike watching a magician, the audience does not automatically assume they will be tricked.

One factor particularly relevant to this thesis is plausibility. The ability of mentalists to portray their abilities as real is primarily a function of the *plausibility* of the effect. The mentalist might for example introduce deliberate errors into the act to simultaneously increase drama, and through imperfection, suggest the possibility of genuine psychic ability. A means in which pseudo-psychics enhance plausibility is through diminishing the significance and drama of the effect. Lamont and Wiseman suggest 'there may well be an inverse relationship between how impressive an effect is and how believable it is as a demonstration of true psychic ability' [Lamont & Wiseman 1999: 111]. It is the contention of this thesis that this characteristic similarly holds true in the instance of mixed reality deceptions. Rather than presenting an effect that is incompatible with the audience's world view such as a levitating lady, *The Black Box Sessions* and *Häusliches Glück* present simulated virtual characters that, on the contrary, are plausible within their given contexts. Of the spectrum of computer agents that populate these mixed realities, the most believable characters are predominantly the most unassuming and insignificant. The trivial nature of their presence and actions inherently make them all the more plausible.

Deception is therefore achieved using the same techniques of misdirection as magicians. However *The Black Box Sessions*, and to a lesser extent *Häusliches Glück* were initially framed in a similar manner to pseudo-psychics, spiritualists and mentalists whose abilities are so effective, the illusions defy all logic; they are irresistible [Mada 2011]. Indeed Randi remarks 'even a few otherwise responsible scientists have climbed aboard the flamboyant but

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[15] For similar reasons pseudo psychics tend to avoid props that are directly associated with magic acts. Playing cards for instance are substituted with common items such as spoons and keys thereby reducing suspicion by distancing the pseudo psychic practices from the entertainment medium [Lamont & Wiseman 1999]. These items further aid deception as individuals find it hard to comprehend that trickery could occur with such a trivial item they are intimately familiar with.

rickety [paranormal] bandwagon as it careens noisily through this period of human history'
[Randi 1982: 1]. The alluring nature of these illusions may also explain the paradoxical
beliefs of Sir Arthur Conan Doyle who—although a man who defined logic and deductive
reasoning through his character Sherlock Holmes—spent the latter part of his life
championing the cause of spiritualists [Schmit 2005].

2.5   Deception in Media

> The concept of the real, some would suggest, exists in a state of unstable equilibrium. If
> nudged, ever so slightly, it will slip into the world of illusion and hallucination.
> [Topper 1983]

Media experiences can be framed in a similar manner to the psychological deceptions
discussed in the previous section. That is, they can be presented as reality, presented as
fiction, or presented as fictions in which factual elements intrude thereby rupturing the
existing context and shifting perception of the work into more ambiguous zones. The
capacity for a mediated event to deceive audiences is founded on the interaction between
formal and content characteristics of the medium and the overall context in which the
experience is framed. Schiffman identifies two approaches to illusion represented in the
arts that correspond to magic.

The first form, 'the illusion that the unreal is happening' [Schiffman 1997: 307] is
evident in the *levitating woman* effect and corresponds to artistic practice depicting realistic
representations of fantasy content. This is similar to Lombard's concept of 'presence as
realism' where a media experience can be high in perceptual realism but simultaneously low
in social realism [Lombard & Ditton 1997], say, for example, in a science fiction film in
which the formal characteristics indicate realism, but the content indicates a type of fantasy,
e.g. aliens are present. This form of illusion requires the audience to suspend disbelief and
is 'fragile, breakable, destructible, given an unwelcoming frame of mind' [Schiffman 1997:
307]. Conventional mixed reality practices tend to approach the field from this first
perspective by mixing artificial computer representations with real physical space. For
instance, Jeffrey Shaw's *Golden Calf* [Shaw 1994] in which a computer generated 3D golden
calf effigy is composited with a panoramic image of the surrounding environment. When
viewed on the movable LCD display, the calf appears to be located on the plinth in front
of the user. Toshiharu Itoh comments that Shaw's approach 'emphasises the creativity of

the border region where one foot rests in the real world, and the other in a world of fantasy' [Wilson 2002: 711] highlighting that this form of experience presents a dichotomy in which the mediated elements are clearly perceived as artificial. Other notable media works that similarly encourage presence through immersion, however, present the viewer with artificial simulations. These include *Telematic Dreaming* [Sermon 1992], *Osmose* [Davies 1995], *Place, A Users Manual* [Shaw 1995], *Be Now Here* [Naimark 1995-2002], *World Skin* [Benayoun 1997], *BodySPIN* [Time'sUp 1999-2000], *The Visitor* [Courchesne 2001], *Si Poteris Narrare, Licet* [Bruyère & Arredondo 2002], *Run Motherfucker Run* [Nijs 2001-2002], *Eavesdrop* [Pledger & Shaw 2004], *Bystander* [Gibson & Richards 2008] and *The Artvertiser* [Oliver 2008]. These works, while highly successful and engaging media experiences, all share the common attribute of relying on the capacity of the audience to suspend disbelief during their encounter.

The second approach to illusion in art is identified as any 'realistic, illusionistic, or trompe l' oeil artwork' [Schiffman 1997: 307]. The conjuring equivalent is when a magician pretends to pass a coin from one hand to another while all along it remains in the first hand. The move is 'a very real, common everyday occurrence, and yet illusion is used to produce the effect' [Schiffman 1997: 307]. Artworks taking this approach deceive the audience by reframing preconceptions of what the work represents (i.e. reality versus fiction) and exploit the aesthetic conventions of the form they mimic to support this false framing context. They effectively employ the very same devices used by magicians to create realistic illusions such as framing and consistency whilst presenting them in a different domain.

Of the latter form of illusion that Schiffman describes as *trompe l' oeil* and sleight of hand, I have identified three variants within this category and will illustrate these with some examples. These variations are specifically relevant to electronically mediated experiences.

The first form is the presentation of media within an existing framing context that is inherently factual and therefore perceived to be accurate and truthful (factual frame). The second form is created through the exploitation of formal and content characteristics of the medium to develop a false framing context in which the illusion occurs. This form of deception effectively occurs through mimicry of the previous conceptualisation (false frame). The third form of deception occurs when the mediation is experienced as fictional, but formal and content characteristics cause the audience to interpret an event incorrectly thereby shifting the existing framing context. For instance, the intervention of a media

element that is interpreted as real and physically present (shifting frame). This form of deception most closely corresponds to the practice of conjuring in which the actions of the magician will involuntarily make audiences believe in an alternate reality.

The most prevalent occurrence of factual frame deceptions is evident in reportage. Early photographic examples date back to 1855 with Roger Fenton's ambiguous images of a Crimean War scene entitled V*alley of the Shadow of Death*, in which cannon balls were moved within the scene. Although two photos were taken at the scene, the second version (with cannon balls present) is the most widely published [Morris 2007]. Either version could be interpreted as an accurate historical document, however, both represent a distinctly different scene. Wade contends that 'people tend to think of photographs as frozen moments in time, place faith in them, and see them as reliable representations of the past' [Wade, Garry et al. 2002: 598]. Fenton's images exploit these assumptions of the viewer, particularly concerning reportage, namely that photojournalists do not interfere in the scenes they photograph.

Figure 13   Roger Fenton, Valley of the Shadow of Death with cannon balls absent (above) and present (below)

In recent times, misrepresentation has occurred not via physical intervention but by digital manipulation. On March the 30th 2003 the *Los Angeles Times* published a photo by Brian Walski on its front page of a British soldier gesturing to a crowd of Iraqi civilians near Basra [Riper 2003]. The photo was later revealed to be a composite of two separate photos. The reason the image deceived the photo editors—and the public at large—was because documentary practices are meant to portray accurate representations of an event. Evidently, 150 years have rendered this approach to illusion different in method, if not in effect. Despite the fact that Walski's image manipulation was executed and filed within minutes in the middle of a conflict zone, photography continues to maintain its status as 'a medium of truth and unassailable accuracy' [Guilshan 1992: 365].

Figure 14   Brian Walski, *British Soldier in Basra*
(two source images upper, final composite, lower)

A similar type of deception occurred in 2011 when American broadcaster CBS televised heavily manipulated footage of 4th of July fireworks that inaccurately portrayed the spectacular display in proximity to historic landmarks. Given the context the footage was presented in, this was predominantly perceived as real. The producer however claims that the manipulation was above board as the 'show was entertainment and not news' [Bershad 2011]. While it is beyond the scope of this thesis to discuss how the distinction between news and entertainment is currently blurring within the media, it is worthy to note that while the network claims the simulation was entertainment, many viewers interpreted the footage as an accurate representation of reality.

These few examples demonstrate how content presented within an established frame of authenticity can easily deceive an audience. This form of deception is particularly effective, as a strong context in which the work is read already exists, one that has been consistently reinforced in our day-to-day experience of factual media. The form and content of the media simply has to be perceived as plausible within this context for deception to occur. This method of deception is however not appropriate for the artworks in this thesis as they are far removed from any of the authentic presentation contexts noted above.

The second variant of deception (false frame) achieves verisimilitude by mimicking the formal and content characteristics of media such as documentary, news, reportage etc. Rather than already existing in an authentic context, this is implied by the characteristics of the media itself thereby a false frame is constructed.

A notable example of this form of deception is Orson Wells' 1938 CBS radio broadcast of *War of the Worlds*. Over 6 six million people heard this broadcast in the United States of which, it is claimed, one million panicked [Cantril, Gaudet et al. 1947]. Long before the broadcast had ended, it is claimed that listeners were 'praying, crying, fleeing frantically to escape death from the Martians' (other sociologist dispute this claim stating that although listeners expressed concern, the widespread panic described by Cantril is exaggerated [Bartholomew & Goode 2000]).

Why did this broadcast cause such confusion when in actual fact it was just one of many radio dramas broadcast at that time? *War of the Worlds* was crafted to exploit conventions inherent in content with suggested authenticity. For example, it was presented as though regular radio programming had to be interrupted for a series of news bulletins.

These bulletins contained statements from individuals with perceived credibility and authority, such as a professor at the Princeton University observatory in New Jersey. Additionally, the audience heard what was suggested to be live sound feeds and eyewitness accounts from the New Jersey farm where the meteorite had landed. During these feeds, the audience heard the commotion and chaos present at the scene. So the context of the news bulletin, credible characters, eyewitness accounts and the simulation of 'live' breaking news all added to the veracity of the broadcast. Wells' comprehensively exploited the conventions of radio news bulletins of the day. As the radio play did not deviate from these conventions, suspicion was reduced and the content, while extraordinary, was nevertheless interpreted as truthful by many individuals.

The domain of cinema has been a fertile ground for deception with a range of creative practices blurring the boundaries of reality and the fictional. Indeed, since the inception of cinema individuals such as notable magician Georges Méliès explored the form as a means of presenting illusions. Méliès produced over 1200 short films that 'exploited the technical possibilities of the cinematographic equipment to produce visual effects which rendered physical impossibilities on the screen' [North 2001: 74].

In contemporary practice, cinematic deceptions are grouped under the umbrella term mock-documentary - or 'mockumentary' - due to their approach of drawing upon the documentary genre as a means of suggesting their authenticity. Notable films produced in the mockumentary style are *Man Bites Dog* [Belvaux & *Bonzel* 1992]*, Waiting for Guffman* [Guest 1996], *The Blair Witch Project* [Myrick & Sánchez 1999], *Interview with the Assassin* [Burger 2002] *Death of a President* [Range 2006], and the Danish Dogma 95 genre such as *Gummo* [Korine 1997], *The Idiots* [Korine 1997], and *Julien Donkey-Boy* [Korine 1999]. The works that span this genre vary considerably in their capacity to deceive the audience. Common to all these works however is the use of a certain kind of cinematography to create a sense of authenticity by mimicking the conventions of the documentary genre; 'drawing on the rhetoric of naturalism, fly-on-the-wall, or observational documentary [promoting] the idea that the camera can capture reality as it unfolds' [Roscoe 2000: 6]. The nature of the content and the surrounding contextual elements that reinforce the illusion, however, varies, influencing the capacity of the work to deceive.

Nelms warns that developing a high degree of conviction in conjuring is not necessarily desirable and suggests that simple tricks are apt in certain circumstances, such as *Sawing a Woman in Half*, in which an authentic illusion would be undesirable. 'If a foolish

performer dramatised [the illusion] to the point where the audience could almost feel the blade tear through human flesh, they would become violently unpleasant' [Nelms 1969: 17]. This was very much the case in the naturalist horror spectacles of the Parisian *Grand Guignol* in the 19th century in which 'audiences used to faint, shriek, and vomit in the alley outside the theatre. One night the house doctor was summoned to the aid of a fallen customer, but the doctor himself had collapsed' [TIME 1962]. It also proved to be the case in the 1980 film *Cannibal Holocaust* [Deodato 1980] that portrayed the search for a documentary film crew lost in the South American jungle, which upon its release, was considered by many to be a snuff movie based on actual events. The film was banned four weeks after opening on the 8th February 1980 [Petley 2005]. The Italian court subsequently charged director Ruggero Deodato with murdering and torturing the actors. Although the actors contracts required them to disappear for a year to enhance the verisimilitude of the film, one of them was brought back to testify in court to prove the work was fictional [Barry 2006].
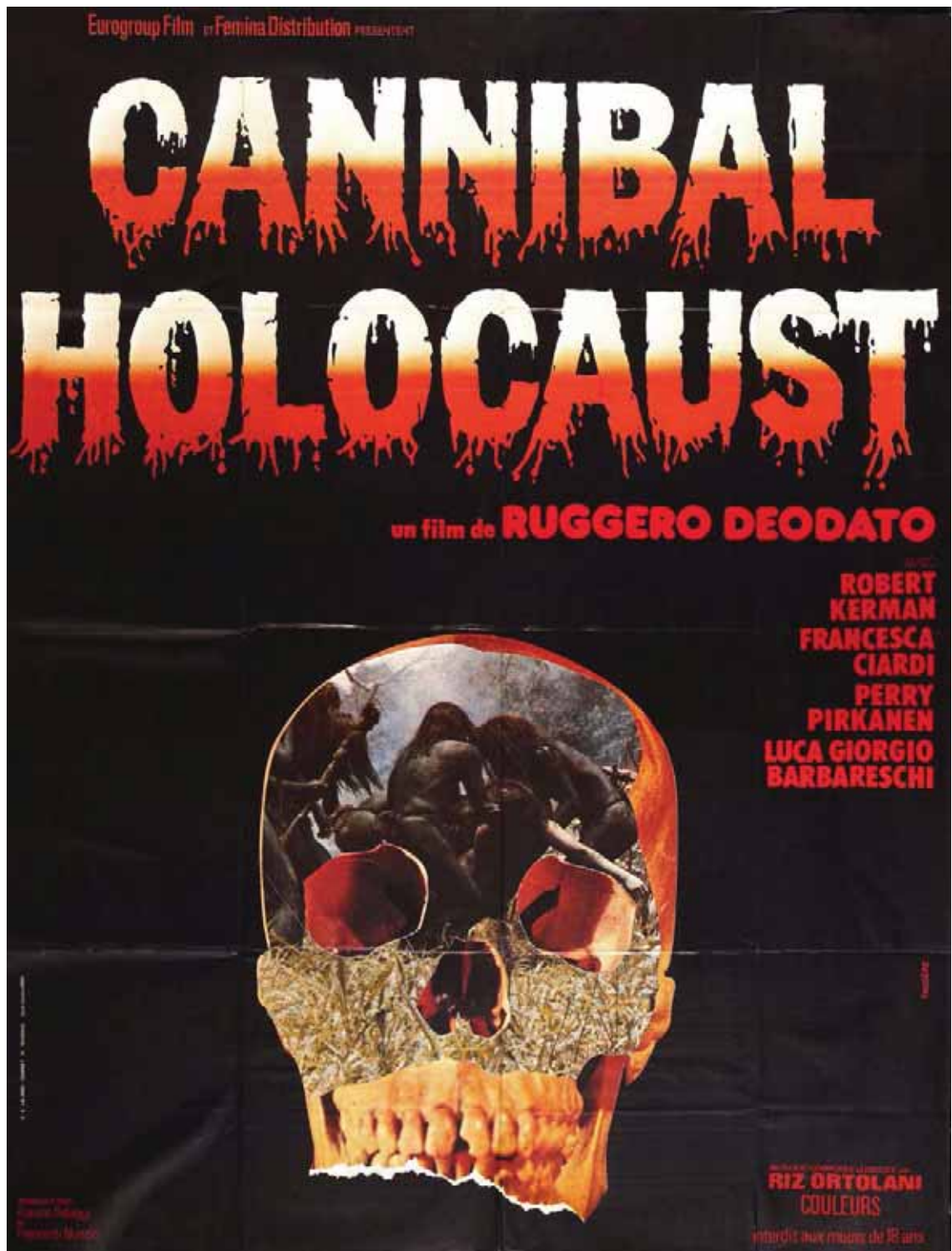
Figure 15   Ruggero Deodato, *Cannibal Holocaust*, film poster

The film was accepted as an authentic documentary due to its ability to mimic the formal characteristics of the documentary medium in which 'the shaky camera work and haphazard direction exactly mirror the kind of footage an observational documentary team would shoot' [Barry 2006]. Petley similarly asserts that the 'found footage' presented in the film:

> … is a compendium of visual devices which one associates with the documentary mode at its most immediate; shaky hand-held camera work, 'accidental' compositions, crash zooms, blurred images, lens flare, inaudible or intermittent sound, direct address to camera, scratches and marks on the print, and so on.
> [Petley 2005: 178]

In addition to these formal characteristics the film begins with a statement that 'for the sake of authenticity, some sequences have been retained in their entirety' reinforcing the false framing context with a nod to the documentary genre. The fabricated content of human murder is additionally interwoven with real killings of animals aiming to 'intensify, by a process of association and osmosis, the verisimilitude of the scenes in which humans are apparently mutilated and killed' [Petley 2005: 180] thereby further confusing the possible interpretations of the work.

Such formal characteristics not only shape the manner in which the work is read, but these same devices can be used as a method of disguising the fictitious nature of content elements such as prosthetic effects. Kerekes and Slater [1994] suggest that deficiencies that might otherwise indicate that these events are simulations were disguised; 'The ever reliable pop start or film hiccup […] occur always at the most technically advantageous moment' [quoted in [Petley 2005: 179] and details of certain scenes are intentionally abstracted by lens flare to conceal the artifice. In other contexts these devices would induce suspicion; however, within the false framing context of the film, they are perceived as consistent with expectations of the form and therefore justified. This same approach to image content is taken in *The Black Box Sessions* as a means to compensate for visual deficiencies in the compositing process. [The process is discussed specifically in relation to this work in Chapter 4].

Another notable film within this genre is *The Blair Witch Project* [Myrick & Sánchez 1999], a story of three student filmmakers who go missing in the Maryland woods while making a documentary about the legend of the Blair Witch.

Figure 16   Myrick & Sánchez, *The Blair Witch Project,* film still

This work very much follows in the footsteps of *Cannibal Holocaust* but employs a wide range of extra textual elements to assist in developing a false framing context. The film exploits the same documentary conventions such as handheld camera to achieve a sense of realism, and, although these formal characteristics support the false frame, the theme is somewhat implausible (similar to the borderline subject of *Cannibal Holocaust*). In spite of this, the characters' response to the theme was appropriate and sufficient in constructing a world 'plausible enough for some sections of the audience to be confused as to its ontological status' [Roscoe 2000]. This is partly because the 'accompanying web-based publicity campaign generated rumours of the films "authenticity" (i.e. that the "found footage" was indeed real), prompting some audience members to visit the film's location in search of "what really happened"' [Aloi 2005: 187].

It was therefore not so much the film itself that contributed to the sense of authenticity, but the surrounding information that created the false frame in which the work was read. This was in turn supported and reinforced by the documentary characteristics of the film:

> Months before the official release of the film, there were a number of dedicated websites filtering various pieces of information to an Internet audience intrigued by the rumors about the film, the witch and the students. Many of these sites had been set up by people who had not seen the film but believed it to be a true story.

These websites effectively participated in the creation of a hoax, either unwittingly because they believed the film to be a real documentary about a real disappearance, or through colluding with the filmmakers to manufacture and maintain the hoax's hype.
[Roscoe 2000: 4]

The fact that many of the sites were set up by individuals who genuinely believed in the veracity of the work long before the film was released demonstrates how a few seemingly factual elements encouraged individuals to make additional connections corresponding to their own desires to read the work as an authentic document.

In conjuring, many approaches to deception rely on indirect reinforcement in which a situation is implied rather than stated. Fitzkee suggests that implication is effective because it 'seems to the spectator to be a voluntary decision on his part, uninfluenced by the magician. It is also stronger because such conclusions, reached in this manner, do not seem to be of particular importance to the performer' [Fitzkee 1975: 97]. Both these elements greatly increase conviction in the event and therefore reduce suspicion. Through suggestion, the filmmakers ensured that viewers who themselves had previously constructed a false frame would readily interpret the film document as authentic, so long as the experience did not drastically deviate from expectations.

Other means of constructing the false frame were even more elaborate such as a documentary screened on television two days before the opening of the film:

Utilizing the leftover footage from the film, it is presented as an expositional documentary and appropriates the expected codes and conventions of that mode. Using "experts" (The Blair historian, professors of anthropology, and folklore[16]) as well as "authentic" looking documents from the time (diaries and letters), its objective is to build up an account to convince us that the Blair Witch exists.
[Roscoe 2000: 6]

By the time the audience is seated in the theatre and the opening titles roll, they have already been potentially exposed to a deeply nested and multifaceted deception that informs the subsequent viewing experience. A mock-documentary framing a mock-documentary! *The Blair Witch Project* presents an exposé of media deceptions and demonstrates how many of the psychological expedients used by conjurers are similarly

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[16] The use of an individual's status as a means of enhancing authenticity mirrors the techniques used by Orson Wells in *War of The Worlds* over half a century prior.

relevant in the context of media. False frames can be implied and can be effectively supported by exploiting conventions that exist within the given media. They further demonstrate how, when appropriate, these very same devices can be used to conceal the elements of the deception within the work thereby creating cohesive and robust illusions.

This second variant of deception is the approach undertaken to develop false framing contexts within my work *The Black Box Sessions* in which intra and extra textual elements all contribute to the overall illusion. [The specifics on how this is achieved is discussed in Chapter 4].

In addition to the two conceptualisations of deception in media outlined above (within factual frames and false frames) is a third variant. These third type of works exist in a fictional context, however, formal elements of the experience rupture this perception and momentarily present an alternate reality outside of the initial framing context. This is the illusory approach of the second artwork presented in conjunction with this thesis, *Häusliches Glück* (examined in detail in Chapter 5). Although the work is framed as a gallery based installation, the mechanics of the illusion confound this perception and open up the possibility of multiple interpretations of the mediated experience.

This third form of deception is evident in two works by Janet Cardiff (often in collaboration with George Bures Miller) that rely wholly on sound to create ambiguous elements that have the capacity to make the audience question what is real and virtual. *The Paradise Institute* [Cardiff & Miller 2001] and *Walks*[17] [Cardiff 1991-2006] utilise the process of binaural recording to convey realistic spatial sound simulations via headphone playback. In *The Paradise Institute*:

> Viewers approach a simple wooden pavilion, mount a set of stairs, and enter a lush, dimly lit interior complete with red carpet and two rows of velvet covered seats. Once seated, they peer over the balcony onto a miniature replica of a grand old movie theatre created with hyper perspective. This is the first in a series of illusions orchestrated by Cardiff and Miller. Viewers then put on the headphones provided and the projection and 3D audio begins, creating a surreal blending of cinematic image and physical space.
> [Beil & Mari 2007: 135]

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[17] There are 24 individual *Walks* at the time of writing. They are discussed collectively as all apply the same broad principles in a variety of contexts.

Figure 17   Cardiff & Miller, *The Paradise Institute*

Beyond the perceptual illusion of the theatre space itself, the primary illusionary device is sound design that combines audio from the fragmented narrative depicted on screen with simulated sounds from the theatre itself.

> Not knowing what to believe, you hear a collage of sounds from the soundtrack of the film you are watching, as well as from people sitting beside you. Was that really a cell phone? At one point the characters you have watched on the screen are talking behind you.
> [Christov-Bakargiev & Cardiff 2001: 151].

The multilayered acoustic space combines chattering and rustling from the virtual audience members seated around you, characters from the film that are sporadically transported to the objective position of the audience, all co-existing with the soundtrack of the film itself. This complex layering of sound, combined with the live ambience creates a mixed reality environment in which the audience's perception of reality is constantly intruded upon by the various virtual elements. The most effective aspects of the deception are the intimate conversations and incidental sounds created by the virtual audience members, particularly those seated behind you (as the source cannot be immediately verified). The content is perceived as familiar (therefore suspicion regarding its veracity is reduced), and even within the hyper real context of the micro cinema are irresistibly

compelling. The mechanics of the work effectively support the illusion. The installation provides a controlled acoustic space, and volume levels can be precisely adjusted (unlike Cardiff's *Walks* discussed next in which the user can adjust the playback level and hence the mix between the real and virtual elements). Layered sound design further assists in masking deficiencies in the technical process in much the same manner as the use of atmospheres and music in a film soundtrack. These characteristics assist in establishing a palpable simulation of acoustic reality. Rather than place the audience in a passive position in relation to her work, Cardiff uses spatial sound as a means of active engagement 'I want people to be inside the filmic experience…I want the pieces to be disconcerting in several ways, so that the audience can't just forget about their bodies for the duration of their involvement, like we do in film' [Beil & Mari 2007: 78].

Janet Cardiff's audio *Walks* present the audience with either a CD player or iPod. After starting at a predefined location the audience member presses play and is guided by Cardiff's voice through the physical environment. Cardiff's instructions are integrated within a narrative soundscape that shapes the audiences perceptions of their immediate environment. The importance of this hybrid reality is highlighted by Cardiff's statement '…the sound of my footsteps, traffic, birds, and miscellaneous sound effects that have been pre-recorded on the same site as they are being heard […] The virtual recorded soundscape has to mimic the real physical one in order to create a new world as a seamless combination of the two' [Cardiff & Miller 2009].

All of the walks are recorded as spatially encoded binaural sound. During playback the audience therefore perceives a realistic multilayered sonic environment comprised of the actual acoustic space they inhabit (via aural transparency of the headphones), artefacts from the same environment at a prior time, and narration provided by Cardiff's own voice, all interwoven with creative sound design. Due to the intimate nature of the binaural recordings (and timbre of Cardiff's voice), the audience has the impression that Cardiff is present, an invisible co-traveller on the journey. The walks are successful not only because of the perceptual realism of the sonic environments they represent, but because they are narrative driven, propelling the audience through unknown spaces and stories. The audience on one hand exists in a fictional world while at the same time is placed in a paradoxical position of being at times uncertain if the sound they heard was present in physical reality or was a simulation.

Figure 18   Janet Cardiff, *Walks* (binaural recording process)

Nigel Helyer's *Sonic Landscapes* [Helyer 2000] approaches sonic mixed realities in a similar manner to Cardiff's *Walks*, but does so in a more technically sophisticated manner.

The work employs specialist technologies that allow for the playback and spatialisation of audio including head tracking information so that the simulation can be adapted in real-time, based upon the user's orientation 'thus creating the impression that they [virtual elements] are real and inhabit physical space' [Roberts 2004]. The spatialisation additionally delivers site-specific content based upon the user's position thereby enabling:

> … a participant to enter into a world of extended audio narratives and soundscapes, whilst negotiating normal everyday surroundings. …The soundscape is delivered as virtual surround-sound via headphones and the audio events appear to be anchored at specific points in real space and share similar acoustic properties to the surrounding ambient sounds…Thus the listener experiences a seamless nexus between the real and the virtual. The participant therefore enters a type of parallel audio world, in which memories of particular sites can be invoked alongside quotient reality.
> [Helyer 2005]

Figure 19   Nigel Helyer, *Sonic Landscapes*

These works indicate how the mechanics of the illusion (in this instance spatial sound) combined with plausible virtual elements can effectively reframe an experience from a fictional simulation to fact. Even if the experience is clearly framed as fiction, the appropriate use of mechanics can present stimuli that is so compellingly real that it disrupts, even if momentarily, the manner in which the audience interprets the mediated experience.

What do these examples of mediated deception indicate? The works discussed encompass a wide range of creative practice including radio, cinema, installation, and locative media. They demonstrate that convincing mediated deceptions are possible and when successfully executed can have profound results. Most importantly to this thesis, they demonstrate direct correlations between the principles of illusion in magic and increasingly complex media-based illusions. While many of works discussed require false frames to be established in order for the simulated elements to be accepted as perceptively real, other examples indicate that, even when an event is framed as *fiction*, the mechanics of the illusion could make the audience believe in an alternate reality, the very foundation of magic.

Chapter 3: Mechanics and Mixed Realities

A device is only a means to an end. Its sole function is to provide the effect, and it has no value in its own right. An ideal device is effective, undetectable, foolproof, easy and inexpensive.

[Nelms 1969: 117]

The most profound technologies are those that disappear. They weave themselves into the fabric of everyday life until they are indistinguishable from it.

[Weiser 1991: 94]

3.1   Introduction

As Chapter 2 has argued, a device unto itself - without the addition of misdirection and showmanship - serves no purpose in creating a conjuring illusion. Just as a conjurer employs a wide range of devices as a means of illusion, practitioners within media arts have a range of tools at their disposal such as audio and visual displays. The crucial difference between the spectator of the stage magician and audiences occupying mixed realities is that the latter engages directly with the mechanics of the illusion (the interface). In a magic show, the audience is conventionally separated from the mechanics of the illusion by the stage and the magician is predominantly the one who interacts with the object or gimmick.[18] This shift in focus of the audience's role dictates that an examination of the mechanics of illusion within mixed realities should be further concerned with the properties of the medium itself and the ability of the medium to foster presence, in addition to drawing from the mechanical characteristics of theatrical magic.

Conjurers employ showmanship to create atmosphere and drama on stage thereby developing a sense of conviction within the act. As noted previously, if an audience member is engaged with the drama, and willingly suspends disbelief, they are less likely to be inquisitive regarding the underlying methods of deception. The process of presence in mixed realities and therefore conviction is not only concerned with content characteristics,

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[18]   When audience members are invited by the magician as volunteers to interact with an illusion's mechanics, it is specifically for the purpose of advancing the illusion by confirming the authenticity of a device, or in the instance of close up magic, undertaking a highly controlled sequence of events integral to the structure of the act. In both these instances in which the boundary is broken, it is always under strict terms dictated by magician.

but also the ability of the medium itself to encourage presence. By addressing these factors practitioners can 'use multimedia to increase and maximise suggestion in order to erode the inner distance of the observer and ensure maximum effect for their message [Grau 2003: 17].'

Based upon the conjuring principles outlined in Chapter 2, the devices of illusion in mixed reality would ideally have the following characteristics: they must be suitable to create the desired illusion; they must be appropriate in the given framing context and, if not, must be concealed through methods of disguise or their presence must be justified through familiarisation or by a ruse; if the devices are key interface elements they should contribute to the sense of conviction, not detract from it, for instance if an interface is justified in the context of the environment, it is no longer perceived as an entity unto itself but becomes logically integrated into the environment as a whole.

This chapter examines the mechanics of illusion in terms of sound, image and physical devices, how these relate to conjuring and how they contribute to deception in other forms of media. The following approaches are consistent across both artworks presented in this thesis. Techniques specific to *Häusliches Glück* and *The Black Box Sessions* are discussed in the following two chapters, each of which is dedicated to one of the works. These approaches not only foster presence during an electronically mediated experience, but also reduce audience suspicion and therefore aid in deception.

3.2   Multimodal Integration

The first concept examined is cross modal reinforcement. A history of the technological development of virtual environments and the implications of these technologies in terms of presence has already been well documented by a number of authors [Barfield & Furness 1995] [Carr & England 1995] [Bimber 2005] [Biocca & Levy 1995][19]. For the purposes of this research, it is sufficient to note that the primary technological focus within virtual environments in relation to audience experience is multimodal interaction encompassing a range of sensory input and output possibilities in an attempt to simulate reality. Christou and Parker describe this process by which:

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[19]   For a comprehensive survey of scholarly research on presence see [Lombard & Jones 2007] and [ISPR 2011].

The artificial world is simulated or synthesized by the appropriate stimulation of the observer; since so much of our experience and knowledge is directly derived from our senses, it is possible to fool the perceiver by making it difficult for them to discern that the world they are experiencing is artificial.

[Christou & Parker 1995: 53].

The multimodal nature of a mixed reality experience addresses what, in conjuring, is referred to as reinforcement, 'the way in which a spectator's belief about specific matters central to the effect are reinforced' [Lamont & Wiseman 1999: 69]. The audience's suspicion may be reduced if each modality works in unison to advance the illusion. For instance, the visual representation of a virtual character is reinforced by corresponding sound, and their actions are further indicated via mechanical devices in physical space. Scholars argue that the more sensory inputs in the mediated experience, the higher degree of perceptual realism, so long as 'the information from various sources is globally consistent' [Christou & Parker 1995: 53]. This is due to the fact that 'senses do not just provide information but also serve to confirm the 'perceptions' of other senses' [England 1995: 168]. Multisensory integration occurs innately within the individual and, as Macknik suggests, it 'is an ongoing and dynamic property of your brain that occurs outside conscious awareness' [Macknik, Martinez-Conde et al.: 104].

The development of illusion via multisensory integration is clearly illustrated by the conjuring act *The Miser's Dream*[20] in which the magician is seen continually plucking an impossible stream of coins from the air and depositing them into a receptacle. As each coin enters the receptacle a loud clink can be heard as the money seemingly accumulates. The illusion utilises both physical and psychological misdirection. Physical misdirection takes the form of simulation and dissimulation in which the coins are either produced from the hand (where they have been palmed) and thrown into the receptacle, or they appear to be thrown into the receptacle but remain in the hand. Psychological misdirection ensures the success of the latter process.

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[20] The effect was first attributed to magician Jean Eugène Robert-Houdin in 1852 who called the illusion *Shower of Money*. In subsequent years after being staged under a range of other names by various performers, it was presented by T Nelson Downs as *The Miser's Dream* in 1895, which it is now commonly referred. [Macknik, Martinez-Conde et al. 2010]

Figure 20   Teller demonstrating *The Miser's Dream*

Two factors are at play. The first draws upon repetition taking advantage of 'our natural inclination to study something we see done over and over again and think that we are learning something' [Teller 2007]. If the sound of a coin hitting the container always follows the action, even when the action is simulated, sound enhances the impression that the event has occurred. The second factor, and the one that most strongly correlates to the mixed reality artworks, is one that exploits the human propensity to interpret multisensory stimuli as occurring from one event. Anderson describes this perceptual process in cinema as temporal synchrony whereby 'if patterns and rhythms are confirmed across modalities, the information carried by sound and image are perceived as being generated by one event' [Anderson 1996: 86].

For instance, in the film *O' Brother Where Art Thou* [Coen 2000] , the opening scene depicts prisoners in a chain gang breaking rocks whilst singing *'Po' Lazarus'*. The sound used in this scene is an anthropological recording produced by Alan Lomax in 1959 [Content, Kreider et al. 2001]. The recording actually documents prisoners chopping wood, however when synchronized to the visual act of rock breaking within the film, audiences falsely interpret the sounds as being produced by rocks rather than wood, even though both have distinctly different sonic characteristics. In *The Miser's Dream* illusion when the audience thinks they see a coin dropped into the receptacle, and the sound of the coin is similarly heard clinking, these two sensory elements are perceived as linked to the one event. The physical simulation of dropping the coin is reinforced by the sound of a concealed coin being tapped with the other hand on the inside of the container.

Cross modal reinforcement is the key media approach used in the artworks to encourage audience belief that the virtual elements are real, addressing Stapleton's conclusion that 'when all our senses validate a virtual event, the experience moves us across a credibility threshold' [Stapleton, Hughes et al. 2002a: 3]. Audience perception of the actions of virtual characters is at all times reinforced by corresponding spatial audio elements. This approach not only addresses sensorial redundancy but simultaneously transforms the two-dimensional representations of the virtual elements in screen space into three dimensional entities that co-inhabit the physical environment with the audience.

Physical devices are used in a similar pursuit of sensory reinforcement in both artworks, and particularly in the instance of *Häusliches Glück*. These mechanics create a 'tactile and visceral impact that can expand the user's scope of perception beyond the limits of visually based mixed-reality devices' [Stapleton, Hughes et al. 2002a: 3]. Just as sonic elements support the perceived actions of virtual characters, so too do physical devices, i.e. if a virtual character can be seen turning a light on within screen space, the sound of the switch flicking can be heard from the location where it occurs, and a light is physically activated.

The reason that physical devices significantly contribute to a sense of realism is that, although suspicions may be present in regards to the visual content, or the intangible qualities of sound, if a physical event is witnessed occurring it is impossible to conclude that the occurrence is a simulation. Suspicions as to the reasons *why* the physical action took place may still be present however, i.e. the light *actually* came on in order to simulate the actions of a virtual character, but the fact that an object moved or the lighting conditions changed is undeniable.

In technologically advanced societies, our daily lives are increasingly dominated by mediated experiences and these are only going to become more prolific with the current trend of convergent media devices. Lev Manovich states:

> At the beginning of the twenty first century the research agendas, media attention, and practical applications have come to focus on a new agenda – the physical – that is, physical space filled with electronic and visual information. The previous icon of the computer era – a VR user travelling in virtual space – has been replaced by a new image: a person checking her e-mail or making a phone call using her PDA/mobile phone combo while at the airport, on the street, in a car, or any other actually existing space.
> [Manovich 2006]

Not only are experiences becoming increasingly mediated, but the line between what is real and what is false is being continually shifted. Timmins observes 'in a world of pseudo-events, we are already seeing the fake masquerading as the real; fake Christmas trees, artificial flavorings and colorings, machines that generate synthetic smells at the store and home, lip-syncing singers, virtual orchestras, and plastic surgery are only the beginning' [Timmins & Lombard 2005].

A familiarity of technology-based experiences can be exploited to deceive, as this chapter argues, however individual relationships to electronically mediated experiences can also be a cause of suspicion. Illusory mechanics attempt to allay these suspicions through the addition of physical devices that exist outside the electronically mediated experience while at the same time confirming the content. They reduce suspicion by reinforcing mediated elements with events that cannot be interpreted as anything other than authentic.

3.3   Image

3.3.1 Display Systems

Conventional approaches to mixed reality often employ body-centred interfaces as a means of electronic mediation, for instance, the Head Mounted Display (HMD), a display system for immersive virtual reality has also been used in mixed reality contexts via the addition of cameras that enable the integration of live video with virtual content.

Augmented reality projects that use mobile computing devices such as mobile phones similarly rely on the user's direct manipulation of the visual display as an integral part of the experience. The thesis artworks take an alternate approach to visual displays which, rather than being body centred, exist in the environment. In conjuring, mechanics that are foreign to the audience are avoided as 'since the device is a contrivance, it must be suspected' [Fitzkee 1975: 112] and a device such as a HMD is just that—cumbersome and unfamiliar. It is a form of mechanics that draws attention to the artificial nature of the simulation and keeps 'reminding us of their artificiality, incompleteness, and contractedness. They present us with a convincing illusion only to reveal the underlying machinery' [Manovich 1998: 399]. Lombard similarly contends that 'for an illusion of nonmediation to be effective, the medium should not be obvious or obtrusive—it should not draw attention to itself and remind the media user that she/he is having a mediated experience' [Lombard & Ditton 1997]. By contrast, if the image displays are presented within the environment and are

interpreted as being consistent with the framing context, the medium itself becomes less intrusive. For this reason, a range of monitor-based displays are used in both the works that are appropriate in context therefore reduce suspicion. For instance, the old 1950s style domestic television used in *Häusliches Glück* is in keeping with the historical context of the apartment. Likewise, the peephole in *The Black Box Sessions* is framed as being a unique mode for the visitor to view the performances within the performance space. Here, the interface is not diminished in importance but rather presented as a necessary and central component of the experience. The surveillance monitor located on the gallery attendant's desk in *The Black Box Sessions* foyer is similarly appropriate to the context. These physical devices of deception recede in significance as they are no longer perceived as merely a means to an end, but appear to be an integral part of the environment as a whole, thereby minimising conscious awareness of the medium itself.

Figure 21   A HMD (and Data Glove) interface

3.3.2 Surveillance Technologies

Surveillance technologies (CCTV) are the primary form of visual device used in both artworks. This technology is either directly employed in the artworks to produce a live video image (*The Black Box Sessions*), or their use is *implied* to simulate a live surveillance video image (*Häusliches Glück*). The visual characteristics of CCTV technologies are familiar to audiences due to the prevalence of video surveillance in many spaces in society, in retail, offices, street, and on public transport to name a few. This means that the medium itself does not induce suspicion and is therefore flexible in placement and usage. In the installation works, attention is not directly drawn to the cameras; rather, their presence is implied via the video content representing their output. The aim is that the cameras appear as natural fixtures within the installations.

There are a number of reasons why these technologies are put into service for the development of perceptual realism.

This first reason is the exploitation of the low fidelity characteristics of surveillance technologies as a means of disguise, the aesthetics of which are used to enhance perceptual realism of the content by addressing deficiencies of compositing process. [This aspect of disguise is described in detail in relation to *The Black Box Sessions* in section 4.2].

The second reason CCTV technologies are used is in regard to the perceived *authenticity* of the medium. This is of great importance as the portrayal of virtual elements in the scene is either directly or indirectly interpreted as being captured by these technologies. If the devices themselves are considered authentic or trustworthy, this reinforces the belief that the content is similarly a truthful or accurate representation of reality. An experiment by Reeves and Nass supports this notion by concluding that humans regard specialist technology in the same manner as they regard expertise of specialist individuals. They evaluate the medium in terms of the *physical* attributes presented, not just the content. In the study participants viewed content on two types of televisions, a specialist set and a generalist set. Individuals thought that 'news was significantly more important, informative, interesting and serious when it was shown on the specialist set' [Reeves & Nass 1996: 146].

In addition to the physical properties of the medium, the visual characteristics of surveillance content (such as low fidelity image) further suggest authenticity.

In discussing the properties of incidental and CCTV footage within the 'caught on tape' entertainment genre West contends that:

> …compromises in audio and visual pleasure which this mode of production may entail are traded off against a heightened feeling of the real […] The poor quality of caught-on-tape footage thus becomes a marker of realness because it signals certain circumstances of production. The co-incidence of unpredictable content and unprocessed medium adds up to a powerful and pervasive sense of the real.
> [West & King: 85]

The fixed camera position and focal length associated with surveillance systems is exploited in two ways to advance the sense of realism in *The Black Box Sessions* and *Häusliches Glück*. Firstly disposing of cinematographic conventions and presenting a fixed perspective increases the sense of authenticity of the experience. Secondly, the use of static cameras enhances perceptual realism by removing the possibility of visual registration issues that occur when virtual elements are overlaid with dynamic content produced by moving cameras. Maintaining consistent registration of real and virtual elements is critical in sustaining an illusion and is currently one of the weakest aspects of mixed reality software and hardware.

Surveillance technologies are used in the installations to exploit audiences' familiarity and expectations of the medium. Macknik and Martinez-Conde conclude 'once you've habituated to a feature of the world, it becomes a humdrum and seemingly immutable part of the fabric of life. Stable, reliable, unchanging' [Macknik, Martinez-Conde et al.: 144]. Magicians routinely exploit this psychological property in order to reduce suspicion.

> Suspicion may be diverted and scrutiny may be materially reduced if it is possible to make a piece of the magician's apparatus appear to be something ordinary, something with which the spectator is somewhat familiar […] something with which the spectator has reason to believe the deception is impossible.
> [Fitzkee 1975: 113]

CCTV technologies encompass these traits; they are omnipresent, woven into the fabric of society. When presented with such technology the individual may reflect: if my previous experience of surveillance technology portrayed an authentic depiction of reality, then my current experience of the technology (within the installation) is likely to do so too.

The implications of surveillance technologies discussed above are succinctly demonstrated in *Safe zones, no 7 (The toilets at ZKM),* [Dahlberg 2001] by Jonas Dahlberg in which:

> Dahlberg placed a monitor outside a toilet at the Hannover Kunstverein: the monitor made people imagine that the toilet space was being monitored by a camera, that anyone who intended to pay it a visit had to resign himself to answering the call of nature in a very public convenience. It was not until the visitor made up his mind, despite this, to make use of it and stepped in, that he realized what was really being monitored in there: a minutely detailed model of a toilet, placed in the same space, turning this everyday environment into a small, exquisite Chinese box.
> [Stjernstedt 2002]

Figure 22   Jonas Dahlberg, *Safe zones, no 7 (The toilets at ZKM),* left image, CCTV outside toilet, right image, inside the cubicle.

Both the physical display characteristics, and the fidelity of the image, encourage the audience to interpret the situation as being authentic. As audiences are accustomed to the veracity of these technologies, it is hard to conceive that they might be employed in a deceptive manner.

Both artworks in this thesis attempt to exploit the unique characteristics of surveillance technologies outlined above, either through direct use or suggestion, as a means to advance a sense of realism within mixed realities.

3.4   Sound

Although always considered a 'poor cousin to vision' and having long 'played second fiddle (in the fourth chair!)' [Begault 2000] sound plays a key role in audience experience of all forms of media and 'touches every aspect of a comprehensive communication system' [Kramer 1995: 259]. Sound is particularly effective in the development of realistic illusions, as section 2.5 indicated by discussing artistic works such as Janet Cardiff's walks that 'undermine perceptual certainty' [Lilienthal 2005]. While these examples are clearly framed as fiction, and no attempt is made to conceal their mechanics, they nevertheless succeed in their deception by exploiting characteristics of human auditory perception.

The Black Box Sessions and *Häusliches Glück* use visual displays as the primary indicator of virtual human presence within the environments. Sound serves two illusory functions, both discreet and interrelated with the image content.

The first is that sound is used to reinforce the visual activity represented on screen while, at the same time, locating this activity within the physical environment. Traditional approaches to sound design in visually dominant media such as television or cinema similarly use sound to reinforce visual representations on screen. These forms of media have evolved to incorporate multichannel surround audio (such as the various Dolby surround formats) as a means to enhance audience experience. Spatial audio is primarily centred on the development of atmosphere as a means to envelop the audience, not to portray the specific off-screen actions of the characters. Where sound is used to suggest the activity of characters, it is uncommon to hear this aural content in surround channels (at the rear of the cinema for instance) as such approaches are considered to be too distracting from the primary focal point of the experience, i.e., the frontal screen space [Sergi 2004]. For instance, a character is rarely heard moving from the rear of the cinema to the front, as this would merely draw attention away from the screen and towards the artificial environment that the audience occupies. Significant off-screen content is therefore commonly presented via speakers to the left or right of the screen. Activity can therefore be implied beyond the confines of the screen (such as a door opening) while at the same time maintaining the audience's focus on the image. These approaches to spatial sound design are not a function of technological constraints but are a convention as 'the possibility for greater articulation of the relationship between front and rear sound is

available to sound designers and their taking up this "challenge" is partly dependent on being able to break down old established views' [Sergi 2004: 147].

In contrast to these techniques, the two thesis artworks approach sound in precisely the opposite manner. Sound is always spatially located exactly where it would occur in the physical environment in relation to the image depicted on the screen. The aim is to draw attention away from the screen and place equal weight on the surrounding environment. Speakers presenting the audio are disguised through a variety of techniques so that the audio content is not directly linked to any form of electronic mediation. The sound is therefore perceived as occurring naturally within the environment. In the one instance when a sound emitter is not disguised (the radio in *Häusliches Glück),* it is treated in a similar fashion to image technologies and presented as a prominent element of the total environment. Approaching sound in this manner has considerable bearing in the creation of illusion as it conveys to the audience that, although the two dimensional image they are viewing in the display is electronically mediated, what they are seeing is seemingly occurring via live sonic cues. The surrounding audio content is however not perceived as part of the mediated experience, rather as naturally occurring within the environment. Sound within the installations not only reinforces the visual content (as discussed in section 3.2), but also simultaneously shifts the manner in which the audiences interpret the visual content, rather than a simulation, an authentic live visual representation of the surrounding three-dimensional space.

The second example of the use of sound to create an illusion can be found in instances where sound is employed as a means of simulation in its own right. In this context, the use of sound corresponds to off-screen sound in cinema whereby actions or events are suggested through sound alone. The implied meaning may or may not be directly linked to the visual scene represented. The use of off-screen sound within the installations can be interpreted as not only occurring beyond the confines of screen space (as in a film), but also anywhere outside the immediate visual field of the audience, for example, where sound emanates from behind a wall or within an adjacent room. In this sense, the entire environment can be interpreted as 'screen space'. Sound content that inherently conveys meaning without the aid of image media is used extensively in both works as a means to spatially enhance atmosphere, advance narratives, and create logical continuity. For instance, in *The Black Box Sessions*, the door by which the performers enter is entirely simulated by sound thereby enabling the audience to imagine its physical

characteristics and location although the structure does not in fact exist. The plausibility of the simulation is subsequently reinforced when, shortly after hearing the door open, the audience sees the performer walk into the visual frame from the same direction as where the imagined door is situated.

The following two chapters will demonstrate how these approaches to the mechanics of illusion are applied in practice within the two installation works, *The Black Box Sessions* and *Häusliches Glück*.

Chapter 4: The Black Box Sessions

4.1   Introduction

This chapter examines the creation of illusion in the mixed reality installation *The Black Box Sessions,* the first artwork developed as part of the practice-based component of the research. This work (and the subsequent work discussed in Chapter 5, *Häusliches Glück*) will be examined in terms of mechanics (media) and misdirection (method) based on the salient conjuring principles identified in Chapter 2. Although media and method are discussed independently, both elements work in conjunction to produce the illusion. This chapter demonstrates how this experimental study addresses issues related to the creation of perceptively real virtual characters within mixed realities. It begins with an overview of the installation and provides a background on production and postproduction. Following is an examination of the work in terms of the mechanics of the illusion, that is, the physical components that contribute to deception. The chapter then examines how the psychological elements of conjuring misdirection and showmanship have been employed. The application of these principles is also examined in regards to the foyer component of the installation that was added in the third iteration of the work. The chapter concludes by reflecting on the benefits and deficiencies of this particular approach including a comparative analysis of the work in relation to the previously produced mixed reality installation, *Dislocation.*

The Black Box Sessions is an augmented reality installation that was initially developed in Linz, Austria, in conjunction with artist group *Time's Up* between August and September 2008[21]. The initial prototype was presented at HAIP festival, Ljubljana, Slovenia in November 2008. Over the following three years the work was exhibited twice more, undergoing substantial revision during each of these production and presentation phases. These exhibitions were at architekturforum oberösterrreich (afo), Linz, Austria in September 2009 and again at UTS Gallery, Sydney Australia in May 2011.

It is the third revision of the work for UTS Gallery, Sydney, Australia, that forms the basis for the discussion in this chapter. These developments were undertaken in May 2011 for a six-week exhibition that commenced on the 31st of May. This revision created a large-

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21 Time's Up provided structural support, technical advice and installation assistance for the project.

scale installation by integrating the central performance space (as it existed at the afo venue) within a wider environment that included a waiting room, attendant's desk and back stage area. In this respect, the final iteration of the work can be examined as two discreet physical spaces and, as such, will be discussed in this context within the chapter. The central element of the work (the performance space) will be discussed in the first half of this chapter, and the surrounding environment (the foyer) in the latter part. Both these elements work in unison to advance the illusion of perceptively real virtual characters.

4.2   The Performance Space

4.2.1 Introduction

The Black Box Sessions takes place in a pitch-black room approximately 5m x 6m in size. Single audience members are invited to enter the room, under the premise that they will be presented with a performance by one of several entertainers. To view the performance (in the pitch-black room) the audience member finds a single peephole located in the wall of the space.
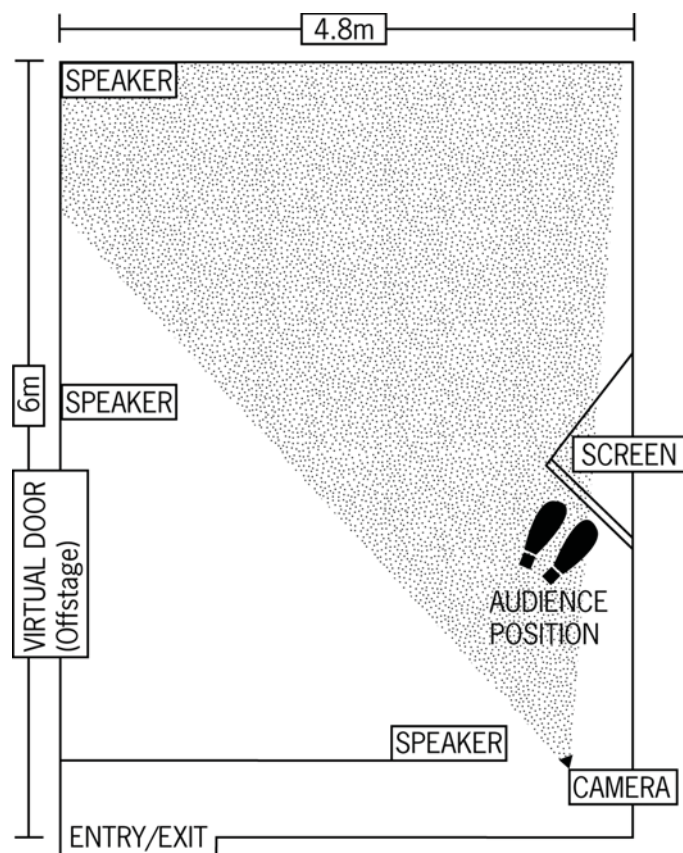
Figure 23   *The Black Box Sessions*, installation layout, HAIP 2008

When looking into the peephole, the audience member sees a screen with a live video feed of themselves, captured by an infrared capable camera at the rear corner of the room. The audience member hears a door open off to the left in the darkness, and then sees the performer enter into the room via the video image. The performance commences…

Figure 24   The Black Box Sessions, view of screen space via peephole showing computer agent and audience member, HAIP 2008

The Black Box Sessions was conceived as a way to address a fundamental question that arose after multiple public presentations of the installation *Dislocation*. *Dislocation* demonstrated that it was possible to create a palpable illusory presence by deceiving the audience through auditory and visual displays in a mixed reality context. However, due to the design characteristics of the installation this illusion is difficult to sustain for any significant length of time. Although this approach provides many benefits (as outlined in section 4.4) several limitations are also inherent making it difficult to further examine the central concerns of the current research.

In *Dislocation*, when the audience looks away from the screen and toward the installation space behind them, they are immediately aware that the computer agents are illusory, and that they are looking at an empty room. The experience of the simultaneous presence and absence of characters is akin to a conventional conjuring illusion in which an *alternate reality* is revealed. This led to the question: how would the audience respond if, in fact, their whole reference to reality was mediated via the augmented display systems and audio? Could the audience, believing the agents are real and physically present, actually follow directions, or engage in a manner similar to that of real human-to-human interaction? Central to exploring these questions was reframing the work as being founded on reality. In this respect, the manner in which the audience is deceived by the work is akin to the practices of pseudo psychics outlined in Chapter 2. Techniques from conjuring are employed, but the audience interprets the events as reality, not fantasy. The established false frame is subsequently supported through the formal and content characteristics of the work.

In contrast to *Dislocation* the complete darkness of *The Black Box Sessions* performance space means that audience members are denied the use of their primary sense: sight. Their visual perception of the physical surroundings is entirely mediated by technology. The audience members, viewing the live video of themselves on a screen, sees and hears the agent enter the room. However if they look around, they are presented with an enveloping black maw. They are still able to hear the presence behind them (heard through speakers in the black space), and looking back at the screen see that the virtual character is still in the room, via the mediated image.

During the first production period for the artwork, six performers collaborated on the prototype: Scott Sinclare, Didi Bruckmayr, Roland Penzinger, Patrick Huber and Las Venus (Conny Kraus and Bert Zet). Subsequent to this presentation, a further eight performances were recorded at a studio in Sydney during March 2009 (of which six were used in the final work). The performers were Matthew Stegh, Justin Shoulder, Celia Curtis, Marty Jay and Claire Conroy, Annabel Lines, Pete Manwaring, and Chas Glover. This new content, in addition to the previous Austrian performances, formed the basis for the work, which was presented in Linz. During revision for the afo exhibition a range of technical elements were also refined including visual aspects of the illusion, substantial re-structuring of software event sequencing, and revision of sensor technologies used to determine audience location within the installation.

Each performer was captured on video within a chroma key studio that was configured to simulate the physical installation space. Floor markers indicating the location of the (future) audience members were applied so that the performers could tailor their performances to the position of the audience. These markers, in addition to other key reference points such as wall locations and exits, ensured that the performers would not 'walk through' the audience member or through physical objects within the installations space thereby nullifying the illusion. The performers were instructed to engage with the (future) audience members, and to imitate performing in a pitch-black space so that their actions would be consistent within the context of the actual installation environment. The performers were directed to not wear any green or white clothing as the chroma key cyclorama was green and these colours would be predominantly removed in the keying process. As the final video composites are black and white, all other colours were reduced to greyscale. The acts varied from previously rehearsed repertoires to completely new improvised scenes, and in certain performance scenarios, a combination of both. In all instances, performances were tailored for the specific and somewhat unusual requirements of the performance space in which they would ultimately be presented. Several scenarios were recorded for each performer, often taking the form of distinctly different acts. For instance, Didi Bruckmayr staged both a monologue and a strip tease. Content development was therefore a fluid and collaborative process of working with a wide range of international performers from different disciplines.

One of these performance variations (over thirty in total) is randomly selected via custom software triggered by an audience member entering the installation space. In addition to the performances, Brendan Lloyd played the role of a gallery technician and can be seen walking through the space between shows carrying props and equipment. Michaela Davies acted as a bemused spectator navigating the darkened space, providing another counterpoint to the drama of the acts.

Studio location sound was mixed in postproduction with music from the acts (when appropriate) and spot effects to complete the virtual sound stage. Further discussion on the use of sound, image and control software for the performance space will be examined in the following section, the mechanics of illusion.

Figure 25   *The Black Box Sessions*, production stills of a selection of performers from Linz and Sydney

4.2.2 Mechanics

Analogous with conjuring, mechanics form the material elements that are required to create an illusion. In this instance, the mechanics are visual and auditory display systems combined with electronics. This section examines the physical elements of the performance space and how they contribute to the illusion of perceptively real virtual characters co-existing in the physical environment with the audience.

4.2.2.1 Visual Concepts

After the performers were recorded upon the chroma key cyclorama the footage was digitally processed to remove the background. This process enabled the performances to be subsequently composited over the live video feed of the audience. Both the dimensions of the studio and the location of the camera were precisely matched in the installation's performance space. When experiencing the work, the audience member therefore sees both themselves and the virtual characters from the same perspective, and the behaviour of these characters also appears consistent within the limitations of the physical environment; the characters do not walk through walls or float above the ground.

Due to the nature of the compositing process, the virtual characters were layered over the top of the live video. This constraint presented the problem of occlusion. When figures in the two layers intersected, rather than logically appearing behind the spectator, the virtual character would be visible as a small individual located in front of the spectator. A suitable camera perspective was chosen so that, when a virtual character crosses over in front the spectator, they do so closer to the camera and therefore logically appear larger while covering the audience member. A buffer zone was established so that, when further from the camera at the rear of the room, a performer would not cross over into the spectator (or the spectator could not reach out or kick the performer), as this would rapidly destroy the illusion. These two approaches ensure that the perceptual process of occlusion was addressed, that is, when 'one person is partly hiding behind another person, you naturally assume that the person who is not occluded is closer to you' [Macknik, Martinez-Conde et al.: p32]. The final result is an environment that is both spatially plausible and consistent with audiences' expectations.

Avoiding intersections that could undermine the illusion required manipulating the audience members as well as the performers. Size constraints of the initial presentation

space dictated that the virtual characters would be required to occupy a small confined space alongside the audience member and the likelihood of intersections between the audience and agents within physical space was therefore high. The key to addressing this problem was constraining the performance experience to one audience member at any given time. This simplified the production process and established a more robust illusion. It negated the need for the complex collision detection systems and image manipulation such as those employed in *Dislocation*. A single audience member is never able to see themselves walking through an agent, as they are in a fixed position at the screen. If they do deviate from this location and intersect with a virtual character, they are located elsewhere in the space and therefore unable to see the screen. These visual deficits of the compositing process are therefore disguised through the spatial arrangement of the virtual characters and the management of spectators.

The visual experience of the work is centred on an LCD screen located behind a peephole in the enclosure. During presentations, audience members had little trouble locating this 30mm hole, as the pinpoint of light produced was effectively the only visual point of reference in the otherwise pitch-black space. The peephole was designed to minimize light bleed from the screen as the success of the illusion depends on the inability of spectators to see their surroundings and to rely entirely on the electronic mediation as their only reference to reality. A by-product of this interface is that it alludes to voyeuristic modes of viewing. The viewers find themself, not only in the position of distant voyeurs, but also unexpectedly spying on themselves in the very same scene.
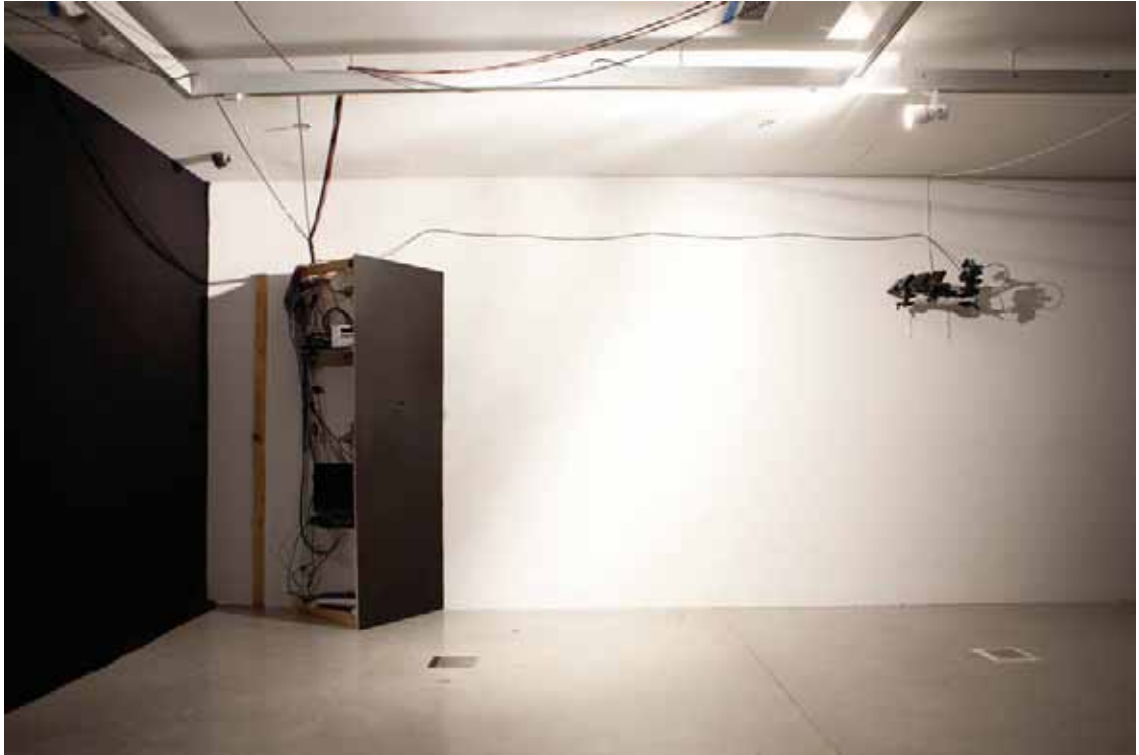
Figure 26   *The Black Box Sessions* – enclosure (with door removed-left) and camera / IR flood lights (right), UTS Gallery 2011

The primary design of the visual systems in *The Black Box Sessions* performance space are centred on the use of infrared camera technologies. When looking into the peephole, the surveillance technology clearly presents the pitch-black room to the viewer as if it is brightly lit (as in fact it is via four high power infra-red flood lights, imperceptible to the human eye). A by-product of the use of such technologies is a low fidelity black and white video signal, which not only informs the aesthetics of the image but is also exploited as a means to resolve the illusion. By reducing the colour-space of the image to greyscale, the characters that had been recorded in the chroma key setting could be more readily composited with the live video as common artefacts of the keying process such as green fringing would be less evident.

The low-resolution nature of the surveillance feed is also exploited to seamlessly craft the visual composite. The final image the audience views within the peephole is in fact comprised of numerous layers of video content. Firstly the base layer of live video is captured, on top of this the performance video is added, previously reduced in resolution to match the characteristics of the live image. An additional layer of video noise is then added to aid in blending the visual composite. A final layer consisting of video static is also added. The sporadic glitching and distortion within this layer is analysed by the control

software and used to cause all four video layers to unstably fuzz and glitch in unison. The purpose of this is to link all the layers of video into a single, consistent visual entity that disguises the process through a seemingly erratic technology fault. If the audience and the agents appear to inherently have the same visual characteristics, it encourages the notion that both are being captured by the same live camera.

Rather than opt for a high fidelity display to generate the illusion, the opposite approach was undertaken to achieve the same result. While this approach would be ill-suited for a Hollywood blockbuster, in *The Black Box Sessions* it conforms to audience expectations of the technology's low fidelity aesthetic (as discussed in Chapter 3).

Exploiting the characteristics of the surveillance medium demonstrates the conjuring principles of consistency, justification, and disguise in the treatment of the illusion's mechanics. The agents are visually consistent with their surroundings and their visual appearance justified in the context of the medium. The addition of noise to the composite is similarly justified and consistent with an individual's pre-conceptions of low fidelity analogue video signals. The medium itself is used as a means to disguise inherent deficiencies in the technical process. The end result is that the visual characteristics of the virtual characters are equal in fidelity to the representation of the audience in the visual display.

4.2.2.2 Auditory Concepts

During production live sound from the studio performances was recorded and is mixed with the addition of foley, music, and spot effects to create a complementary sonic environment for the visual content. The overall approach to the audio environment is based upon diegetic sound.[22] There is no atmospheric sound and the only music presented is directly related to the performances themselves, not used as an additional dramatic device. The sonic foundation of the work is, therefore, the natural live atmosphere to which sounds generated by the virtual characters are added. This approach is undertaken to reinforce the verisimilitude of the experience by removing any artificial elements that do not directly relate to the actions of the performer. It also further distances the work from fictional audio-visual mediums such as cinema. These techniques are similarly employed by spiritualists and pseudo psychics who attempt to reduce suspicion by avoiding using

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[22] Diegetic sound is a term derived from cinema in which the source is evident on screen [Cohen 2008], (i.e. a car radio seemingly presents the musical soundtrack to the scene).

objects that are commonly associated with the presentation of stage magic [Lamont & Wiseman 1999]. In both instances, the use of elements associated with artifice potentially increases suspicion in relation to the other aspects of the illusion. For example, if the audience suspects certain media elements to be a simulation, the virtual characters may very well also be suspected as simulations.

Beyond presenting audio content that directly corresponds to action on screen, further sound design was undertaken to enhance the environment. Off-screen sound is used to artificially define architectural elements of the space and extend the narrative capabilities of the work beyond the visual frame defined by the camera perspective. In doing so, the actual physical constraints of the installation space are no longer a limiting factor as to the scope of the activities virtual characters could undertake. On the wall behind the audience, a non-existent door is created from which the performers enter via sonic cues prior to walking into the visual frame (see Figure 27). Behind this virtual door, cast and crew can be heard chatting, arguing and moving props around. For example, Patrick Huber's character engages in an increasingly heated argument in the 'back stage area' behind the virtual door. The muffled confrontation continues behind the door until, frustrated, Huber enters the performance space (screen space) still launching a torrent of abuse before slamming the virtual door. This form of pre-determined off screen activity acts as a prelude to the entrance of a character and assists in defining a performer's personality prior to their presence in screen space. Even in the absence of a viewer observing a character's actions via the peephole, audio elements convey activity occurring within the installation. This in turn fosters curiosity and draws the user toward the peephole.

Figure 27   *The Black Box Sessions*, installation view at HAIP (with lights on) in which the upper speaker on the left simulates the virtual door and the lower speaker, the performer's amplifiers, HAIP 2008

As discussed in Chapter 3, the interplay of sound and image can be used to increase the degree of presence (and therefore conviction). The audience initially hears the activity of what they perceive to be a person within the space. This is subsequently confirmed via their visual sense when the character enters screen space.

Another example of multimodal reinforcement in the work occurs during the performance by Las Venus. The act consists of Connie Kraus playing the theremin and Bert Zet playing the guitar. The performance space is set prior to the entry of the audience, so that by the time they reach the peephole, the appropriate virtual props are in place and awaiting the entry of the performer. In the instance of this specific performance, a theremin is installed in the space. As part of the custom software developed, the theremin responds to spectators' input whereby the pitch of the instrument changes with the proximity of the audience member. If they walk by the object upon entering the space they hear the effect of their presence. The source of sound produced is subsequently confirmed when they look in the peephole and see the theremin located behind them. Similarly, if they see the theremin in the peephole and walk backwards towards it, they can no longer view their actions within screen space but can intuitively play the instrument via sonic feedback. The unique properties of the theremin are well suited for the illusion as it is one of few

instruments that are actually performed without any physical contact. The illusion is further supported in the context of the work, as a viewer's actual proximity to the object is always uncertain in the darkness. In both instances, the virtual object responds in a manner that is consistent with an audience's expectations. Sound confirms the visually representation of the instrument and vice versa.

Figure 28   *The Black Box Sessions,* Las Venus performance with theremin, HAIP 2008

The all-pervasive darkness of the performance space results in the audience becoming more reliant on spatial aural cues to interpret their surroundings. All sound elements within the installation are spatialised to locationally match the activities of the avatars, represent objects, and to define off-screen architectural features such as the virtual backstage door. Due to the small size of the installation space, direct point sources are appropriate for the majority of sounds as very little panning is required (due to the relatively fixed location of the virtual characters and objects). Speakers are therefore placed at the actual origin of the virtual sound source. For instance, one speaker is located at the position of the virtual door; another speaker is placed corresponding to where the performer's amplifiers are evident on screen etc. Of the various approaches to spatial audio available, this method was chosen as it produces a very precise placement of sounds as they emanate from the actual

location of the virtual objects. Representing the virtual acoustic space predominantly via direct point sources avoids many of the common deficiencies of spatial audio. The audience is rarely located in the 'sweet spot' of the speakers (i.e. central to the array) and, furthermore, they often move continuously within the environment. Both Vector Based Amplitude Panning (VBAP) and Ambisonic techniques are unable to successfully cater for these circumstances and rapidly lose their spatial image. Wavefield Synthesis (WFS) techniques for audio spatialisation can be utilised to present audio with no defined 'sweet spot' however this technique is extremely equipment intensive therefore was not implemented in the current revision of the work. The rear wall of *The Black Box Sessions* where the light lock is located would be well suited for such a large speaker array as it would not be visible within the camera's field of view and, additionally, the installation has the unusual property that an intrusive amount of technology (upwards of 100 speakers) would not be visible in the darkened space. WFS would most likely be the future approach to sound spatialisation within the performance space if further development is undertaken.

4.2.2.3 Software and Interface Design

This section provides an overview of the software design and indicates how it shapes the structure of a typical audience experience. Custom software was developed in MaxMSP /Jitter [Cycling74 2008] to control all the media content of the installation. Key goals of the software were to capture live video from the performance space, composite this live stream with the pre-composed performance videos, present multichannel audio synchronised to these sequences, identify the location of the audience via a range of sensors, and respond to this information through media and electronics.

In order to create an experience that is structured in a coherent and logical manner, several sensors are positioned within the performance environment to determine the location of the audience. All the media elements presented within the performance space respond to the current state of these sensors, so that in the absence of human intervention, the installation can subsequently run autonomously.

These sensors are: a camera located within the light lock hallway at the entrance to the performance space (sensor 1); a second camera in the main space (sensor 2) that also captures the audience for the mixed reality display; and an infrared sensor embedded in the panel beneath the peephole (sensor 3).

Video content from the two cameras is analysed within the software to determine changes of state, indicating the presence or absence of the audience within specific regions. The combination of these sensors conveys sufficient information to establish when an audience member is entering the space, exiting or viewing the screen. For example, as an audience member enters the light lock, sensor one is activated and a timer is started in the software. If the audience member enters the field of view of the second camera in the performance space, this indicates they are entering and not exiting the space and the initial timer is reset. If conversely the second sensor remains inactive after the timer has completed (30 seconds), the assumption is that the audience has exited the space. If the second sensor does determine that an audience member is present, a performer is randomly selected from the database, the virtual room is set with content for the upcoming performance and any off-screen sound elements that acts as a prelude to the scenario are triggered. As the audience continues in the darkness towards the peephole activity from the characters therefore becomes audible. When they reach the peephole, sensor number three is activated indicating that the audience member is located directly at the screen (as it specifically responds to the localised proximity of their body) and remains active while the spectator is present at that location.[23] The relevant usher sequence for the selected performance begins to play. The usher is seen entering the room behind the audience, announcing the forthcoming spectacle, and upon exiting, the performance commences after a specified delay.

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[23] Even though the camera within the main performance space could be used to determine if audience members were specifically located at the screen, the catch 22 of this approach is that if the audience member is located at the peephole and engaged with the content, they do not tend to move, therefore resulting in false state change (of being present but seemingly absent due to lack of change within the image) The IR sensor located directly at the screen ensured that dropouts in the camera tracking could be crosschecked with continuous sensor data.

Figure 29   *The Black Box Sessions,* 'Minty' the Usher announcing upcoming show

Within this structure, variation is created by randomising performer selection during each entry. As several acts were recorded for each performer, these were additionally randomised. If an audience member wishes to view several performances sequentially, or returns at a subsequent date, variation ensured distinct experiences during each visit and conceals the mechanical structure of the work.

In addition to the random performance selection, two other random occurrences are designed to occur sporadically during the work to further enhance the dynamic structure. The first occurs prior to the usher's announcement of the act whereby a technician might be seen entering and moving props through the space before the performance commences. The second occurrence is introduced intermittently during randomly selected performances. A woman representing an audience member can be seen blindly entering from the light lock and feeling her way towards the peephole behind the audience member. When she is in close proximity to the audience member at the peephole, she realises that there is another person in the room, apologises and make her way slowly back towards the exit.

If the audience member is still located at the screen after a performance has ended, a new sequence is loaded after a pre-set time in which the usher persona returns and instructs the spectator that the performance has ended and they should follow the usher to the exit. At around the same time (depending on the particular act), the performer who has just finished their show can be seen exiting the virtual back stage room and moving towards the real exit. This random approach to content reduces the rigid sequencing structure by introducing dynamic unexpected elements to the experience, particularly in the instance of repeat visits where there is an expectation that events will unfold in the same consistent manner as before. This in turn reduces suspicion as to the veracity of the experience. For example, if the audience becomes aware that the content is consistently replicated, they are less likely to believe that the content is 'live' but instead pre-determined.

Facilitating the audience's navigation within a pitch-black room while maintaining the level of darkness poses a difficult challenge. Entry and exit points have to be identifiable yet at the same time can not produce significant light spill that would illuminate the performance space. Two luminous signs are installed in the light lock that enable the spectator to find their way back to the exit yet do not compromise the darkness. The signs are required to re-energise with light at intervals throughout the day to remain luminous. LED lights are controlled via the software to turn on when the performance space is not in use to recharge the signs, and to automatically turn off when an audience member enters the first door of the light lock, thereby returning the room to complete darkness.

During the prototype presentation at HAIP festival, an attendant was present to ensure that only one audience member entered the performance space at a given time. In subsequent presentations of the work, this had to be revised due to the long duration of the exhibition. An automated system of green and red lights is installed at the opening to the light lock that is activated via the software and hardware in a similar manner to the charging LEDs. These indicators enable audience members to ascertain if the performance space is vacant or engaged.

The installation is therefore designed to be completely self-sufficient. Automation enables the software to run perpetually, after each performance resetting and awaiting the entrance of a new spectator.

Figure 30   *The Black Box Sessions*, entrance with automated lighting entry indicators and signage, UTS Gallery

4.2.3 Misdirection

This section examines how design considerations of the installation environment and virtual characters draw from principles of misdirection in conjuring (psychological as opposed to the previously discussed mechanical methods) in order to achieve the illusion that the performances were live and not a media simulation.

4.2.3.1 Framing Context

The starting point for illusion in *The Black Box Sessions* was framing context. This principle is central in the capacity of the work to deceive the audience. The initial framing of the work is logically a media arts work in a gallery context. This perception fundamentally has to be re-defined in order to achieve the outcome that the audience actually believe they are going to encounter real live performers that are physically present within the exhibition space. A range of methods is used to establish this perceptual shift in order to set up the illusion inside the installation.

All references to the work in both print (catalogues etc) and didactic signage within the gallery itself indicates to the audience that they are going to enter the installation and experience an intimate solo performance by one of several performers. To enhance this sense of 'liveness', the gallery signage apologetically states that, due to availability, not all performers listed will be present throught the whole course of the exhibition. It humanizes the mechanical spectacle and contributes to diverting attention away from the fact that the content is pre-recorded.

During the third iteration of the work presented at UTS Gallery, sandwich boards outside the gallery were designed to further advance the illusion. They depicted conventional publicity images and text, however, rather than stating the gallery opening hours, these times were instead indicated by the statement "Performance Times 12-6 Daily" thereby subtly reinforcing the illusion through suggestion.

Figure 31   *The Black Box Sessions*, exterior signage

The exhibition catalogue was designed to mimic a theatre program including performer biographies and photographs in addition to the catalogue essay written by Adam Jasper who was instructed to comply with the ruse (and who enthusiastically obliged) by never indicating the true nature of the work (refer to Appendix III).

Additional promotion surrounding the event also substantiated this illusion. In Austria, I was interviewed on ORF radio (Austrian National Broadcaster) in relation to the work and explained the project as a live performance environment in which the audience is able to experience the shows via electronic mediation. This was similarly the case in Sydney during magazine interviews and radio promotion in which the artwork was discussed in terms of an installation environment affording a novel perspective to experience live performances. The false explanation is also interrelated with the successful application of technology used to achieve the illusion. By framing the work as a mediated performance experience, the visual elements and illusionary characteristics of the CCTV image previously discussed are consistent with audience expectations.

The success of establishing the false frame was influenced by the wider circumstances in which the work was presented. The first public presentation of the work was in the context of a larger festival (HAIP 2008, Ljubljana Slovenia). The second and third

presentations occurred within the constraints of traditional gallery contexts (AFO, Linz, Austria and UTS Gallery, Sydney, Australia). Although the deceptive framing context catered for all these circumstances, the festival environment offered a more plausible foundation for the illusion as there were other live performances programmed as part of the event. Nelms [1969:196] notes that 'logic requires a frame of reference or context. A successful conjuring theme baffles logic by providing a false frame of reference'. The audience at HAIP festival could easily believe that live performances were also being presented via electronic mediation within the installation. Despite these varying circumstances, the work nevertheless succeeded in deceiving audiences on all three occasions based upon my observations at each presentation.

In addition to the surrounding promotional content, the name of the work itself was chosen to support the deception. *The Black Box Session*s was selected due to the fact that the audience would experience the work in pitch-black surrounds and 'sessions' is a common term in musical performance (i.e. session musicians). The name further resonates with 'black box theatre', minimalist flexible theatre environments that became widespread after the 1960's. The name, while being broadly ambiguous as to the specific nature of the experience, hinted that the audience was going to witness a live theatrical spectacle.

Presenting the audience with the notion of live entertainment establishes a less threatening context given the dominating darkness the user encounters within the performance space. If the nature of the experience was wholly unknown, or if the content from *Dislocation* was presented within *The Black Box Sessions* the results would most likely have been terrifying. The entire purpose of constructing the necessary environmental characteristics of the illusion is negated if the audience is repelled and the work is never encountered.

Through the use of false frames, the basis for the illusion is already firmly established in the audience's consciousness before they even enter the physical installation space, each element reinforcing the next to establish the live performance context. The technical and perceptual devices (as outlined in the mechanics section) are subsequently employed to support these collective signifiers as a means to resolve the proposed situation. The successful establishment of a false frame is critical for the success of the illusion, clearly if the work was revealed in its true light (that of an illusory mixed reality installation) prior to the audience's entrance, the deception would certainly fail.

4.2.3.2 Consistency

Consistency is used as a device in the work via the virtual characters that occupy the space, and within elements of the environment itself. As outlined previously, consistency in magic can be examined in two ways: factors that are perceived as normal and familiar due to their appropriateness in a given context; and consistency in characterization, behaviour that conforms with expectations.

Consistency in the environment is based on the audience's expectations of what the environment should appear like within the given framing context. Certain expectations are established and the subsequent experience must conform to these expectations or suspicion is aroused. The prior establishment of the deceptive frame ensured that when entering the installation, the audience knew they were going to experience a performance, and they knew this would occur in a pitch black space, and that it would be mediated by technology as a means of viewing. When a spectator did enter the space, it was as they expected, a pitch black room, with a small viewing peephole located within the room. When they looked into the peephole, they were presented with artefacts (virtual, yet seemingly real) related to a live performance that was about to commence in the room including amplifiers, microphones, chairs, and other relevant props. The sonic environment similarly conformed to the visual representation of the scene. The characteristics of the virtual content were therefore familiar and appropriate in the context of a performance space. As the audience has no prior knowledge to the specific nature of the electronic mediation, the peephole and display are similarly accepted as appropriate within the unconventional presentation context. Reducing audience suspicion through consistency enabled the physical devices of deception (the sound and image technologies) to achieve their effect.

Simulated architectural elements were also designed to conform to the audience's spatial awareness of the exhibition space. The virtual door was placed at a location where it might logically exist in relation to real architecture structures (i.e. not leading back out into the gallery or on to the street). When the audience hears activity emanating from behind the door, or the door opening, it is therefore plausible that additional space lies beyond the room they occupy. At no time was the audience afforded an opportunity to confirm the physical presence of the door, it was imperceptible in the darkness and always led to a suggested location that was inaccessible to the audience.

Consistency in characterization is also necessary for developing and sustaining the illusion. Unlike a magic performance, the installation inherently offers less control over the actions of the audience. Further, the ability of the computer to respond to audience interaction is vastly deficient compared to a conjurer's capabilities on stage. Both these factors had to be addressed as the illusion would rapidly break down if the virtual characters behaved in inconsistent ways. If the false frame initially swayed the audience, inconsistent characterization was the primary factor in *The Black Box Sessions* that had the ability to cause the experience to deviate from an illusion of reality. The installation is specifically designed to not only examine momentary deception (as *Dislocation* had already successfully demonstrated), but to sustain the illusion for as long as possible, the goal being that the entire experience of the work from entry to exit was understood as involving interaction with real humans.

One method to address this issue was to approach the behaviour of the performers as being primarily focused on their performances. Their manner naturally would not encourage expectations that they may engage with, or respond to, the audience beyond their own planned actions. For instance, if an audience member talks to the performer mid act, the performer continues to complete the performance in a focused manner without responding to the action.

In certain sequences a range of performers directly address the spectator verbally and with gesture. For example, a greeting in the instance of Las Venus, abuse in the case of Patrick Huber, or direction by Celia Curtis the usher. When these interactions occur they are designed so that the avatar's behaviour is plausible within context, just as the previously mentioned single-minded dedication of the performers is within the bounds of reason. For example, when Patrick Huber questions the audience, he barely gives the audience time to respond before continuing his rant, which is in character.

Figure 32   *The Black Box Sessions,* Patrick Huber during virtual performance, HAIP 2008

These methods are used as an alternative to instilling the virtual characters with sophisticated artificial intelligence and therefore the ability to dynamically respond to the environment. As discussed in Chapter 3, static video entities were chosen to present characters with a high degree of visual realism in a trade-off to behavioural dynamics. Applying consistency maintains social realism and overcomes some of the deficiencies of this approach. In this sense, highly sophisticated technical approaches to characterization are not always required in mixed realities. By drawing upon the methods that magicians use to maintain consistency, media developers can design virtual characters' personalities and actions so that they are plausible in order to maintain suspension of disbelief during audience interactions with avatars and agents.

4.2.3.3 Continuity

Continuity is achieved in the performance environment via two methods. In a meta sense, continuity is evident in the dramatic elements contained within each virtual performance. These simulated acts are analogous to a live performance that inherently has its own structure and continuity. Continuity broadly applied to the installation as a whole is

achieved through the use of the usher persona who directs the audience once inside the installation, introduces upcoming performances, and indicates the act's conclusion thus adding logical structure to the experience. The whole experience therefore has clear boundaries within a finite beginning and end framed by interactions with the usher. This logical narrative structure enables the development of illusion without disruptive or incongruous elements detracting from audience engagement with the content.

4.2.3.4 Conviction

Virtual performances have the potential to provide innately engaging and compelling content for the audience, the premise being, if a particular performance is entertaining in reality, this should equally translate to the mediated equivalent. Maintaining interest via the content of the work encourages sustained audience participation. It further aids in deception through suspension of disbelief so that they are less likely to be critical of the medium's illusory elements. Following on from processes developed for *Dislocation*, live video is used as a means to incorporate both the viewer and the virtual characters into the same scene.[24] This approach to deception in mixed reality is significant because the audience's perception of their own image in screen space strengthens the veracity of the medium as an authentic representation of reality. This in turn enhances the effectiveness of the resulting illusion.

The concept behind this approach is that the audience is more likely to accept the image as truthful if they can verify their own presence through action within screen space, and importantly, reach this conclusion by their own accord. When virtual characters are subsequently introduced the audience is inclined to think;. *I am present, they are present, and therefore we are present in shared space, acting together in real-time.* This visual illusion is further enhanced by the fact that the real and virtual representations are equivalent in image fidelity.

Positioning the audience as an integral component of the visual image further causes a comprehensive shift from the audience taking the role as a passive observer to that of an

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24   The concept of integrating the audience in some manner within the video image, be it through manipulation of the image or time displacement, has been successfully explored since the inception of video art with works such as *Video Place* [Krueger 1974], Present Continuous Past(s) [Graham 1974] or Hallucination [Campbell 1988] to name a few.

active participant. There is no need for the audience to be complicit to participate in the media experience, it is unavoidable, they *are* the media experience.

To enhance the audience's sense of being integral to the work, the actors were directed to engage with the audience members via gesture and voice. Performers in the majority of the acts oriented themselves toward the spectator to acknowledge their presence in the room and to encourage the feeling that the performance was specifically for them. Rather than existing incidentally in the environment, the audience is drawn into the drama and becomes a central element of the act. To further enhance the sense of realism, the performers were instructed to address the audience, but to do so in a somewhat vague manner, i.e., to naturally look just past the audience member as they themselves would not be able to precisely know the audience's location in the darkness.

4.2.3.5 Justification

The Black Box Sessions applies the conjuring concept of justification in several ways. The virtual characters were designed to have conceptual and physical links to reality. This is demonstrated in the design of the usher persona. The practical purpose of the usher was to direct audience members to both real and a virtual exit points, and provide short interactions with the audience members between the more lengthy performance pieces (each performance ranged from 1 to 10 minutes in duration). The alternate purpose of the usher persona was to determine if direct natural contact with the audience members can elicit a response, i.e. whether audience members would follow directions from an agent. A positive response would indicate a holistic illusion. The combination of usher and performers created a virtual representation of a plausible live performance scenario, an entertainment structure an audience would be familiar with.

During the prototype, the usher character was dressed in a distinctive uniform and always carried props in the form of a flashlight and folder. The intent was to have the real gallery attendants at the HAIP festival exhibition wear the same uniform (and carry the same physical items) so that when the audience subsequently encounters the virtual usher, they subconsciously correlate the characteristics to those of the real employees. This approach exploits the conjuring process of familiarisation in which an action that may raise suspicion is made to appear more natural by introducing the spectator to the process. Thus, the audience familiar with a real usher outside the installation considers the virtual one in a

similar manner.[25] The presence of the virtual character is justified via their human counterpart. Although part of the initial design, this aspect of the work was not fully implemented in the prototype presentation due to staffing difficulties. Because of the practical difficulties associated with long term exhibitions and staffing, subsequent revisions of the work removed this human element so that the installation could be completely automated without requiring the presence of any additional staff.

In conjuring, justification is used to make necessary inconsistent actions or devices that are required to execute an illusion seem natural. A key device of deception in *The Black Box Sessions* is darkness. Darkness however in this context is generally deemed unusual and therefore this property of the environment needed to be justified to reduce suspicion. This was achieved through the use of a ruse that was set up during the course of establishing the false frame. The ruse conveyed to the audience that the installation presented a mediated performance occurring in pitch-black surrounds; under the guise that this was a novel approach to live performance. The key concealing device of darkness was therefore justified in this context and did not arouse suspicion that other motives were present. The darkness consequently justified the presence of the visual display required to present the illusion of the virtual characters co-existing with the audience. If the audience were not reliant on the electronic mediation to experience the performance (due to its capacity to portray an image in total darkness), the presence of a display would have appeared incongruous. The ruse therefore justified the darkness, which in turn justified the mediated display, both critical elements of the visual illusion.

4.2.3.6 Surprise

Surprise occurs in *The Black Box Sessions* when the frame by which the work is interpreted shifts from one of real performers to simulated virtual characters. The revelation of an alternate reality (which is in fact reality) is the point where the illusion unfolds. Interest beyond this moment is maintained through the dramatic structure, the content of the work, and the emotional response associated with being delightfully duped in a magic act. The revelatory moment might not occur at all in the instance that the audience is never deceived, nor occur if the audience is permanently deceived. During the

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25 This principle is similarly employed in conjuring through demonstration and explanation when an unfamiliar prop is used e.g. 'the guillotine invariably cuts a vegetable in half before the spectator's head is put in place' [Lamont & Wiseman 1999: 61]. This quickly establishes the prop as a functioning guillotine and therefore reduces suspicion.

exhibition opening at UTS Gallery, one individual was convinced that real performers were present and maintained this idea for about an hour, another had the same experience but did not discover the truth until several days later. In both instances it was conversations with other individuals that revealed the work as a simulation.

Surprise may also occur via unexpected events that cause shifts in the perceptual frame through the course of the work. In addition to the performers, characters undertake the more unassuming roles of a technician/attendant whose task is to facilitate the performances, and a casually dressed spectator who accidently enters the space during the performance, unaware there is already a spectator present. As a counterpoint to the inherent drama of the performances, these scenarios appear incidental and relatively mundane. They furthermore occur at random and unexpected times. If an audience member has undergone the transition from believing that the performers are real to that of a simulation and becomes comfortable with this assumption, the introduction of an 'everyday' character that they can readily associate with disrupts this perspective and creates uncertainty. For example, a gallery-goer works their way blindly into the darkened space (just as they did moments earlier). The contrast of these characters' appearance and behaviour to that of the performers momentarily shifts the relative level of realism up a notch thereby exceeding the threshold required to cause this perceptual shift. Although both the performer and virtual gallery goer exhibit the same degree of *perceptual realism*, common association may increase the sense of *social realism* and cause the audience to re-question their previous assumptions.

4.2.3.7 Disguise

Disguise forms the foundation of *The Black Box Sessions* enabling the audience to perceive the virtual characters as being real and physically present. Unlike methods of disguise used in *Häusliches Glück* (outlined in the following chapter) key elements of the underlying technologies in *The Black Box Sessions* performance space did not require concealment as they were incorporated into the framing context of the experience, i.e. the audience was aware that they would experience performances by 'live' artists specifically via electronic mediation. This meant that any technologies linked to this concept did not have to be disguised but in fact could be bought to the fore. Other aspects of the mechanics such as the speakers used to shape the acoustic space or deficiencies in the compositing

process (as previously discussed in the mechanics section 4.3.2) did have to be concealed in order for the illusion to succeed.

The most fundamental concealing device to achieve this was darkness. The audience was rendered sightless to any elements that were not specifically related to the illusion made visible via the display. Darkness concealed the fact the incongruous technology such as speakers were present in the performance space, doors did not really exist, and performance objects that appeared to be present via the mediated image were absent. Most importantly of all, darkness disguised the fact the performers did not physically co-exist in the room with the audience. Because of the profound concealing quality of darkness, the illusion of virtual characters could potentially be sustained indefinitely, so long as perceptual and social realism continued to exceed the threshold of believability.

In addition to the black maw of visual concealment, sound was also employed as an element of disguise. As discussed in Chapter 2, disguise in conjuring is not only concerned with concealment of objects or actions, but also the process of making something appear to be what it is not. To this end sound is used to disguise discrepancies within the visual content of the work. For instance, performer Chas Glover is seen attempting to lift what appears to be sizeable barbells in a classic sideshow strongman act. The barbells are in fact wood and a fraction of the weight of their iron counterparts. Sound effects were used to disguise this fact by replacing the dull thump of timber with simulated metallic clanking and creaking. The metallic sounds are justified and consistent with what the audience member visually perceives: Chas straining to lift a seemingly formidable weight.

Figure 33   The Black Box Sessions, Chas Glover, strongman (production still)

4.3   The Foyer
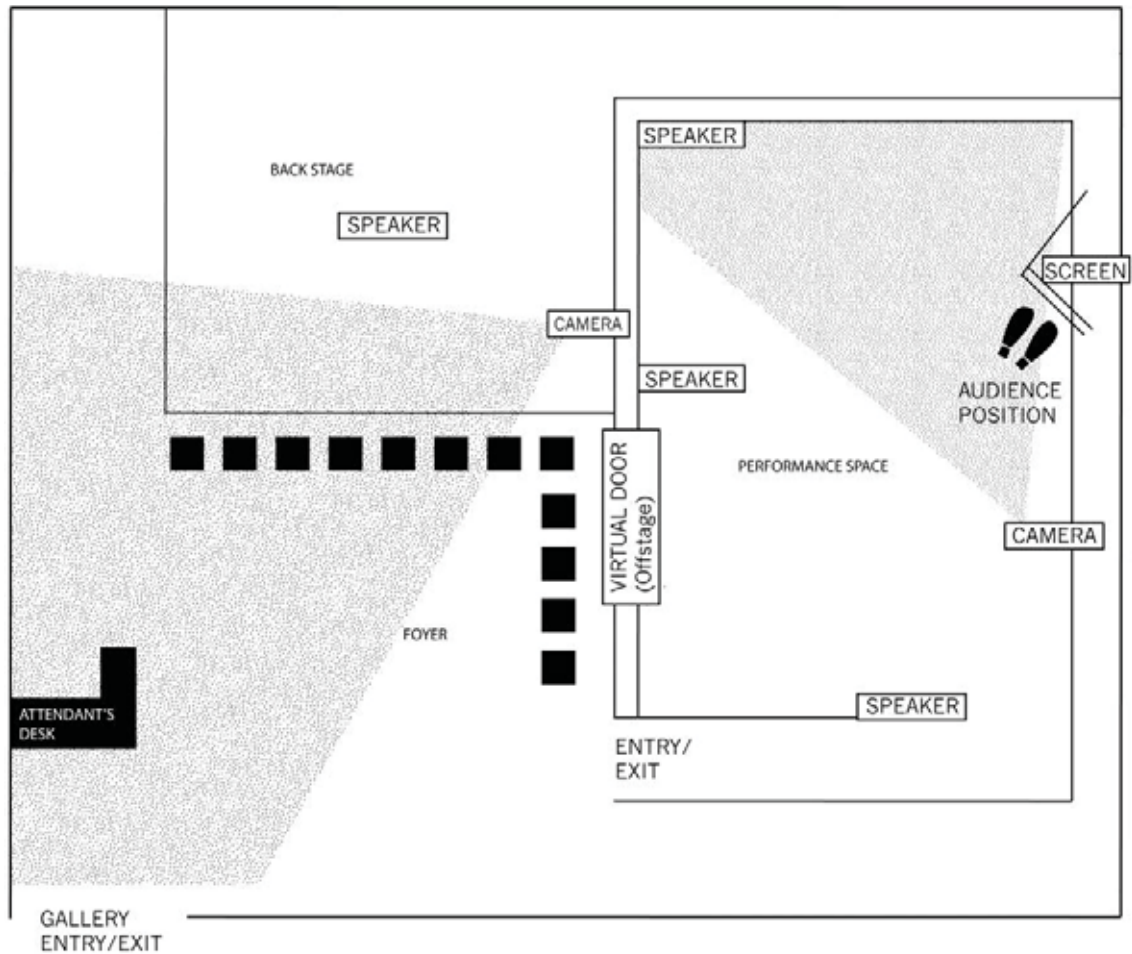
Figure 34   *The Black Box Sessions*, installation layout at UTS Gallery, 2011

4.3.1   Introduction

The Black Box Sessions consisted only of the performance space itself until the third iteration of the work when it was situated within a wider environment, the foyer. Rather than merely providing waiting entertainment, every virtual and physical component of the foyer was specifically designed to reinforce the illusory events that transpired within the performance space, and support the false framing context of the work as a whole. This section provides an overview of the foyer space, continues with a discussion on the technical realisation of the illusion (mechanics), and concludes by examining the psychological aspects of misdirection that are exploited in the foyer component of the artwork.

The various components of the foyer were aimed at complementing *The Black Box Sessions* performance space. The performance space therefore remained the central focus of

the work while the surrounding foyer elements were used to support this primary illusion. The foyer (encompassing approximately 40% of the gallery space) was comprised of three main elements, the seated waiting area, attendant's desk, and a back stage Green Room.

Upon entering the gallery the audience is presented with an attendant's desk similar to what might be found in a hotel lobby. On the top ledge of the desk are performance programmes related to the exhibition. Looking over to the right of the desk is the entrance to the performance space and at the rear of the room behind the desk is another enclosed space, a 3x4 metre room that served the (imaginary) function of a green room for performers to prepare their upcoming shows. Running along the outside of this wall and the wall of the performance space is a series of chairs (and other décor items) creating a space in which the audience can wait for the performance venue to be vacated in the instance that a show is already under way.

Figure 35   *The Black Box Sessions*, foyer and performance space, UTS Gallery

The foyer was conceived to address two significant issues that I wanted to resolve in this iteration of the work.

The first issue concerned the spatial layout of the installation within the gallery. Initial development of the installation was centred on conforming to the exhibition space at HAIP festival in 2008. The presentation space at the festival was small (approximately 35

square metres) therefore the content was designed to fit within these constraints. The UTS Gallery on the other hand was 170 square metres. To effectively use this increased floor space, the performance space was increased in size and the foyer was constructed to balance the overall exhibition space and create a more intricate and immersive experience upon entering the gallery. Rather than entering directly into the discreet enclosed performance room, the experience is that of entering an entire performance venue, adding context to the illusion.

The second and most significant reason for the additional foyer elements was to ensure that the work catered for a range of audience members at any given time. For a variety of technical reasons previously discussed, the work was conceived around the premise that a sole individual experiences a performance at any one time. Although this enhanced the strength of the illusion, individuals potentially had to linger in the gallery to experience the work, which I found unsatisfactory. One of my aims has always been to create interactive works that elegantly scale to accommodate single individuals as well as large crowds. The process of waiting is by no means a desirable characteristic in an interactive system.

The large gallery floor plan at UTS offered an opportunity to address this. The foyer provided the means to wait in comfort (via the chairs), but also incorporate another layer of mixed reality content to entertain, befuddle and deceive individuals. In the instance that the performance space was engaged (or subsequent to attending a show), audiences were afforded a view into the back stage green room in which a range of (simulated) human activity transpired. The illusion was presented via a surveillance camera, monitor, sound, and lighting control. The purpose of these illusory mechanics was to convey the impression that performers were physically located just behind the wall of the green room, tangibly close to the audience.

In contrast to the often dramatic content that occurred within the performance space, the overall approach to the design of the foyer was one of minimalist restraint. The room was sparsely furnished, painted white (in contrast to the inky darkness of the performance space) and the illusory components discreet and unassuming.

Figure 36   *The Black Box Sessions,* foyer, UTS Gallery

4.3.2 Mechanics

This section examines the design and implementation of the green room within *The Black Box Sessions* foyer and how image, sound technologies and physical devices are used to create the illusion of the performers present back stage.

4.3.2.1 Production

A 3x4 metre room was constructed within the gallery space that adjoined the *Black Box* performance venue via a common wall. This room was presented as a back stage green room in which artists were observed preparing for their upcoming shows. In much the same manner as the following work, *Häusliches Glück*, the green room was initially utilised to produce the mixed reality content and then subsequently repurposed to contain the technology required to present the illusion during the course of the exhibition. The continuing presence of the room after the production phase validated the content by providing a physical space in the gallery that corresponded to the virtual representations.

The green room was dressed to reflect a back stage area including items such as a make up mirror, tables, chairs, plants, instruments, cables and drinks.

Figure 37   *The Black Box Sessions,* back stage interior (with Reuben & Pete)

A range of performers were recorded via a several CCTV cameras and microphones located in the room. The performers were instructed to prepare for a show in a natural and casual manner, for example, tuning instruments, applying makeup, and rehearsing acts. These performers were Mike Lira, Chas Glover, Annabel Lines, Marty Jay, Melissa Hunt, Michaela Davies, Reuben Alexander, Lian Loke, Pete Manwaring and Lucas Abela. Two of these individuals actually present shows within *The Black Box Sessions* performance space (Annabel Lines and Chas Glover). It is implied that the other performers are preparing for shows that will take place at some point throughout the course of the day. In addition to these performers, there is one green room sequence that makes a reference to the research that has informed the work. Magician Adam Mada can be seen preparing a series of illusions including a levitating table effect. In this respect, the back stage area of the installation presents the audience with an illusion within an illusion.

Figure 38   *The Black Box Sessions*, back stage interior, Adam Mada (with levitating table)

Audience members are able to view the interior of the green room via a CCTV camera situated above the room, the output of which is apparently displayed on a monitor positioned at the attendant's desk. The screen image seamlessly combines the pre-recorded content from the back stage area with the live surveillance video of the gallery.

Custom software was developed in Max/MSP/Jitter to sequence the back stage media elements. A performer sequence was randomly selected, the video content was displayed at the attendant's desk located at the front of the room, and the monaural sound was presented by a speaker at the rear of the foyer concealed within the back stage area. During two of these sequences, performers can be seen (onscreen) unplugging lights in the backstage area. A floodlight located in the back stage room was controlled via the computer and DMX[26] to turn on and off at appropriate times corresponding to the actions of the character on screen, the physical effect of changing lighting conditions in the gallery reinforcing virtual representations in screen space.

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[26]   DMX is an industry standard lighting control protocol.

Figure 39   *The Black Box Sessions*, back stage/ gallery composite (as seen on screen in foyer)

4.3.2.2 Visual

The visual illusion within the foyer was conceived to examine a new method of combining live video of the audience with pre-recorded content of virtual characters within a single frame. The approach undertaken within the performance space of *The Black Box Sessions*, and previously in *Dislocation*, was to layer the virtual elements on top of the live video via choma key techniques. Instead of this relatively complicated method, the waiting room combines real and virtual elements through a technique as old as cinema itself, an image matte. The matte simply replaces a pre-defined section of the frame with alternate visual content. An early example of the use of such techniques to deceive audiences is evident in the film *Modern Times* [Chaplin 1936] in which an interior scene depicts Charlie Chaplin skating blindfolded and veering perilously close to the edge of a balcony missing a balustrade. The visual effect was created by an early matte process called a glass shot in which 'the deep drop-off to the department store's lower floors was actually painted on a pane of glass, placed in front of the camera and perfectly aligned with the real setting, creating a seamless illusion' [DeMain 2011].

Figure 40   Glass Shot, Charlie Chaplin, *Modern Times* 1936

The following process was used to achieve this effect through contemporary means and with technologies appropriate in the context of the installation. A CCTV camera was fixed high on the wall within the green room with a wide-angle lens. This room was designed so that the walls did not continue all the way to the ceiling, but instead maintained a one-meter gap between the top of the wall and the ceiling. The gap enabled the camera to capture the interior of the green room and the surrounding gallery environment simultaneously. The camera was mounted above the top frame of the wall so that the field of view of the lens encompassed approximately one third of the interior of green room, and two thirds of the remaining gallery space. The top edge of the wall clearly intersected these two spaces diagonally across the frame. It was this wall edge that was the key to the visual illusion. The performers were recorded within the green room by the CCTV camera. A mask was subsequently created in each video sequence that was situated along the inner edge of the interior wall, effectively removing any content outside the third of the frame representing the green room (the remaining gallery space). The edge of this line was feathered by several pixels so that it would seamlessly blend with the live content. Custom software layered this image mask over the top of the live camera feed of the gallery space. As the same camera was used to record the performers, and subsequently capture the live gallery environment with the audience, the qualities of the image and registration of the two elements precisely matched.

Figure 41   *The Black Box Sessions*, back stage CCTV camera situated above wall

The resulting composite of live video from the galley and pre-composed content corresponds to the overall visual approach within the performance space, conveying the impression that the audience was co-inhabiting the physical environment and acting in real-time with the virtual characters.

This method of combining real and virtual elements proved to be particularly effective, and, due to the simplicity of the technical process, in some respects resulted in a visual illusion superior to that achieved within the performance space. The illusion was additionally robust as each visual component is treated discreetly (not fundamentally merged within the scene in the instance of the chroma key approach) and the point in which the two video components intersect is beyond the reach of the audience. It is therefore difficult to disrupt the illusion during the course of normal gallery interactions.[27]

Initially I was concerned that changing ambient lighting conditions within the gallery would reveal the deception through a gradual mismatch between the two visual elements. I addressed this issue in software by continuously analysing the luminance levels present in the live CCTV stream, and used this information to adjust the pre-recorded content in relation to the current ambient light conditions. The aim of this process was to ensure that the live and pre-recorded content would remain visually consistent over time. After numerous tests it was evident that this approach proved unnecessary as stable interior lighting within the green room (the lighting intensity during production was matched with a similar light source during the course of the exhibition) was sufficient to ensure a consistent visual composite even in the event of shifting lightning conditions within the gallery as a whole.

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[27] One inquisitive individual did however test the authenticity of the image by throwing crumpled up balls of newspaper over the wall which I found within the green room several weeks into the public presentation. As the balls crossed over the threshold of the wall, they would have mysteriously disappeared when viewed on the screen.

Figure 42   *The Black Box Sessions*, composite example demonstrating the back stage illusion, content before (above) and after (below) depicting integration with live video feed from gallery

During production, the performers were recorded via two CCTV cameras: the camera located above the wall, previously discussed, and a tighter framed shot of the green room interior.

The initial concept for the mixed reality display was to alternate between several camera perspectives to simulate CCTV switching; wide framing to depict the green room and gallery simultaneously, a second tight internal angle within the green room to provide detail of the characters actions, and a third camera located within the gallery only capturing the audience. Placing equal weight on the different angles—one of which would present an entirely authentic perspective of the gallery—could reduce the perceived importance of the illusory camera perspective (combined live and virtual content). Implying that this perspective is of no particular consequence reduces suspicion. The authenticity of the gallery camera would similarly colour interpretation of the deceptive camera angles through the process of association.

While I did experiment with this idea of switching between camera views, it was abandoned in favour of a single camera perspective for the final public exhibition of the illusion. The interior tight camera perspective of the green room appeared too contrived and therefore did not conform to the incidental aesthetic of surveillance footage I was aiming for. This only became evident when switching between the multiple streams after production. The camera angle was lower, and as we commonly experience surveillance footage from a high perspective, looking down on the subject, the resulting image appeared incongruous within the presentation context. The combination of this issue combined with unacceptable latencies when switching to the live camera would have disrupted the illusion. Both these aspects could be readily addressed in future revisions via appropriate camera framing and alternate hardware.

4.3.2.3 Aural

Sound recorded during production is subsequently presented via a single monaural speaker located centrally in the green room. Due to the small size of the room, this is sufficient to realistically represent the sonic activity occurring within the space. The predominantly isolated room further diffuses the sound and aids in masking any deficiencies resulting from the recording process.

The most important technical aspect of sound presentation in terms of deception is that the volume accurately matches real world equivalents. For example a virtual glass placed on a table corresponds in amplitude to a real glass placed upon a table.

Figure 43   *The Black Box Sessions,* back stage room during exhibition. A single speaker is located centrally in the room with the DMX controlled lights. Tape markings indicate off screen space during production.

Sound emanating from behind the wall is used as a form of attention control within the foyer. Attention control is widely used in conjuring to either distract spectators from the trick elements of an illusion or towards areas of interest that reinforce the illusion. In the instance of the foyer, sound is used to direct the audience towards the visual component of the green room illusion. The audience's natural inclination upon entering the gallery is to sit down on one of the available chairs if the performance space is engaged, or alternatively, directly enter the performance space if it is vacant. When seated, attention focus is logically directed towards the entrance of the performance space, not the surrounding elements of the foyer. The visual elements of the surveillance illusion were intentionally subtle to appropriately conform to the context in which they are presented. The psychological effectiveness of this approach similarly means that the illusory device of the visual display can be overlooked by the audience.

Sound is used as a means to draw attention to this aspect of the waiting room, whilst at the same time doing so in an equally unassuming manner. Rather than stating, 'look over

there at the screen', the audience is encouraged to do so of their own volition. The primary means of leading audiences along this line of investigation is through sound cues.

The sonic activity within the waiting room is the initial means of drawing attention to the presence of virtual characters within the green room and through this sound all the visual elements of the illusion are ultimately tied together. For instance, the audience member is seated, they hear a sound from behind the wall - perhaps a conversation - and look in the direction of the source. By doing so they also notice the CCTV camera located above the wall of the green room. These stimuli arouse curiosity and lead the individual to examine the origin of the sound with more scrutiny. They get up off the chair to further investigate the sound and notice the surveillance monitor on the desk (previously obscured by the desk's structure). On the monitor they see themselves standing and looking at the screen within the foyer, and are simultaneously afforded a view over the wall and inside the green room, seemingly captured via the same camera. At this point the characters within the room are confirmed as the source of the sound previously heard. At the same time, the surveillance camera located above the green room is logically connected with the video presented on the monitor. Even though sounds from the back stage area are located across the room from the attendance desk, they have the capacity to set up a series of logical connections that culminate with attention being drawn towards the surveillance display. A momentary sound is therefore sufficient in drawing attention to the salient elements of the illusionary mechanics and encouraging links between the two visual components, the CCTV camera and surveillance screen.

4.3.3 Misdirection

The foyer employs a range of misdirection that serves two purposes. The first is to successfully execute the illusion that performers are occupying the back stage green room. The second is to link activity occurring within the green room to the performance space thereby reinforcing the subsequent illusion.

4.3.3.1 Framing Context

The foyer was used to strengthen the established false frame previously outlined in this chapter. This was achieved through direct reinforcement such as print material and objects, or indirect reinforcement in which concepts that advanced the illusion were implied. All these elements contributed to the premise that the audience was entering an

environment in which live performances occurred. One of the difficulties in convincing the audience that events were unfolding live was the plausibility of performers awaiting the arrival of audience members throughout the course of the exhibition. Even when the deception did succeed, this was evidently one aspect of the work certain spectators considered. One of the audience members to whom I spoke during the course of the UTS Gallery exhibition asked 'Who is funding this? How are you paying the performers to be here for six weeks?' Another individual stated 'It's incredible that the performers are here every day from 12-6pm'. Both these individuals had left the gallery convinced that everything that had transpired was real, not a simulation. Despite this, these questions evidently had played on their minds. As previously noted, convincing the audience that the performances are real is less problematic if the exhibition is within a wider theatrical context or for one night only. The aim was to use the foyer to reinforce the plausibility of ongoing human presence during the six-week exhibition. Developing a room in which the performers could be seen waiting and preparing for their shows was aimed at reducing suspicion that the characters are media simulations. Rather than the entertainers simply appearing in the performance space, their constant entry and exit from the back stage area suggests that a range of performers were present in the gallery at all times. All the performers appear relaxed back stage, methodically preparing for their shows or simply waiting, thereby further suggesting that they are content to linger in the gallery throughout the course of the day.

In addition to the green room, other elements of the foyer were aimed at establishing a plausible theatre foyer with function seating, decorative plants, information desk and programmes. All these items combined to strengthen the false frame previously established by reinforcing the idea that the audience is entering a performance venue.

4.3.3.2 Consistency

Consistency can be examined within the foyer space in three forms: spatial consistency in which implied aspects of the installation's physical layout conform to logic; consistency within individual elements that contribute to the foyer; and consistency in characterisation of the virtual characters that occupy the green room.

For the illusion to succeed it is necessary that virtual elements indicating specific architectural configurations within the installation are supported by the layout of walls and doors that were physically present. For instance, the green room structure is void of any

public entry point. All activities that occurred within the room are purely indicated via sound, the visual display, and lighting. Without audience access, the room could remain isolated ensuring that the audience could neither confirm nor deny the presence of the virtual characters. The creation of this controlled environment is critical in developing and maintaining the illusion. For the resulting illusion to be plausible however, the entry and exit of the performers has to be consistent with the existing architecture of the gallery. The location of the door to the green room is suggested, by the actions of the performers, to be situated at the rear of the room, a position co-joining a courtyard that is similarly inaccessible to the audience. The inability of audience members to verify the activity of the performers once they have left the green room additionally aided in supporting the notion that the performers may be present for the entire duration of the exhibition, i.e., they have left and are returning, or after preparing are waiting together beyond the confines of the gallery.

The green room was positioned within the UTS Gallery to address problems with the performance space layout. Due to the structure of the gallery, the orientation of the performance space resulted in the virtual door, from which the performers were interpreted as entering and exiting, being physically located in the foyer. As discussed in the previous section, earlier presentations of the work established the virtual door at a wall, the other side of which the audience was unaware of. The possibility of extended space beyond the gallery could therefore be suggested. In the instance of the UTS Gallery exhibition, the audience members in the performance space would have heard artists entering and exiting via a simulated door that they knew full well did not exist in the foyer.

To address this quandary, the green room was situated so that the position of the virtual door corresponded to the interior of the green room. The entry and exit therefore conform to expectations by being consistent with the physical installation layout. The location of the green room additionally reinforces the illusion of the virtual door within the performance space as the characters can logically be imagined moving between these two rooms for the purpose of performing.

The comings and goings of performers are always implied outside the immediate space of the user in order to sustain the illusion. The fact that the location of any doors back stage are in off-screen space within the CCTV image, and no doors to the green room are evident in the foyer further reinforces the suggested location of the virtual doors, i.e.

there must be an access point to the room somewhere; as it is not located at the two walls I can see, it is either located at the rear wall or the common wall to the performance space.

The physical elements of the foyer are designed to conform with expectations of a theatre lobby or waiting rooms. The attendant's desk is built in an L configuration so that the objects on the table are partially obscured to the audience from most vantage points, thereby suggesting privacy that employees require in such circumstances. Upon closer inspection, objects placed on the table suggest human presence and indicate that, although usually present, the gallery attendant has momentarily left their post. Waiting room chairs and décor items such as plants are also consistent with the false frame of a performance space.

The mixed reality display needs to be consistent with the environment in order to reduce suspicion. For instance, if the mixed reality content was presented via a projection on the gallery wall it would have appeared incongruous and drawn attention to the artifice. Instead, the monitor is intentionally located in a discreet manner, partially obscured by the structure of the desk depending on the audience's vantage point. Although consistent within the context of the installation, this is not without its complications in terms of audience experience, as previously discussed. It is however more important in terms of illusion that the screen appear so incidental that it might be completely missed, rather than indicating, 'look at this *insignificant* screen over here'. For the very same reason, magicians would rarely refer to a device as ordinary as 'one naturally stresses that a thing is ordinary only when there is reason to suspect that it isn't' [Fitzkee 1975: 44].

In order for the green room illusion to succeed, the behaviours of the virtual characters are consistent within this context. Unlike the performances, the activities of these individuals back stage for the most part are relatively mundane as they go about their business. The character's actions therefore did not deviate from audience's preconceptions of what may transpire within a back stage room.

4.3.3.3 Continuity

The green room provides a logical continuity within the installation as a whole. Even in the event that the same performer is not identified in both the back stage area and the performance space, the spectator witnesses the performer getting ready, then enters for a show and logically links the two spaces.

Continuity was also addressed during the production to maintain a consistent flow in the narrative elements. The sequences of the performances backstage are randomised during the exhibition via the developed software, providing variation in the instance of repeat visits. To ensure continuity, the back stage area was maintained at a standard baseline of décor. Any individual sequence could therefore be cut to the next without discrepancies. As further contingency to cater for slight object movements, the video is designed to roll when it switches to a new sequence thereby masking any inconsistencies. Rather than seeing a chair shift within a jump cut, which could possibly destroy the illusion, the audience has the impression of a momentary insignificant technical glitch or malfunction, not uncommon with rudimentary surveillance technologies.

4.3.3.4 Conviction

The foyer as a whole contributes to conviction in the artwork as each element reinforces the next to advance the illusion. For example, the artefacts located on the attendant's desk suggest the presence (of a momentarily absent) gallery attendant. These objects are arranged in an uncontrived manner and include disposable coffee cups, newspapers, drinks, pens, doodles on paper etc.[28] All these elements contribute to conviction through indirect suggestion. Rather than the individual being present, the audience constructs their presence via the traces that they have left in the environment. It is through this indirect suggestion and the more direct indicators of human presence via the back stage sound and surveillance display that piques audience curiosity and encourages engagement.

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[28] The naturalness of these items is in fact so convincing that I had to replace over twenty coffee cups throughout the course of the exhibition as the gallery cleaners continuously disposed of them as rubbish, unaware that they were actually part of the installation. Coffee stains and spills that were intentionally added to the table surface were also routinely scrubbed off.

Figure 44   *The Black Box Sessions*, detail of attendant's desk in foyer.

4.3.3.5 Justification

Justification is used as a means to present the technological elements of the mixed reality illusion in a manner that does not induce suspicion. The central visible elements of the illusion that are required to be evident are the CCTV camera capturing the live image and the display to present the resulting illusion. At the same time these two elements have to be in keeping with the context of a theatre foyer so they are not perceived as external to the framing context but naturally integrated into the environment. As discussed in Chapter 3, the aim of this approach is to reduce the impact of the medium, thereby increasing presence and enhancing the illusory content.

The process of justification begins with the attendant's desk. Although this object contributed to the overall illusion in several different ways, first and foremost the desk was conceived as a way to justify the presence of a surveillance camera and monitor located within the foyer. Without the desk, and indeed the type of desk (in L shaped lobby style), a surveillance monitor for its own sake that serves no real purpose would be perceived as completely incongruous and would therefore induce suspicion. For this reason, the monitor is discreetly located on the table and appears natural. In addition to housing the display, the desk is used as a device to justify the presence of the CCTV camera, the second

visual element in the mixed reality illusion. The camera's location and field of view has to be justified so that its presence does not arouse suspicion by being perceived as illogical. The camera is justified via the spatial layout of the foyer, and, more specifically, by the location and orientation of the attendant's desk. The attendant's desk is positioned near the entrance at the front of the room. When sitting at the desk the (implied) attendant would be facing forward and their field of view of the gallery space would be limited. The surveillance monitor is present on the desk to suggest that the attendant would be able to survey the whole gallery space whilst seated at this location, and additionally to view activity occurring over the wall. Had the attendant's desk and monitor been located differently, the setup would have appeared illogical to the detriment of the illusion. For instance, the camera and monitor would then afford the attendant a perspective on the environment that they can already see without the aid of the technology.

Figure 45   *The Black Box Sessions,* foyer (view from next to back stage room looking towards entrance)

4.3.3.6 Surprise

Surprise is evident in the foyer space in two forms. While not employed as a dramatic device unto itself, surprise occurs with the realisation that individuals are present behind the wall in the green room. As the foyer is an integral part of the work as a whole, surprise also occurs in precisely the same manner outlined in the previous discussion concerning

the performance space, at any moment when the framing context shifts from one interpreted as reality to that of a simulation (or vice versa).

4.3.3.7 Disguise

Physical disguise is not a critical element throughout the foyer area since the primary physical elements central to the illusion (the camera and display) are plainly visible to the audience. The remaining sound and lighting elements are concealed via the enclosed structure of the green room while the height of the walls ensured that users could not readily view inside the space.

In addition to these physical modes of concealment, meanings are also disguised in order to convey information while being interpreted as having a differing set of concerns. An example of this form of disguise is evident in a printed document located on the attendant's table. The sheet of paper lists a set of instructions consistent with expectations of a gallery attendant's daily duties. The text reinforces the illusion that the performers are real and present, but at the same time conveys information to the audience about the manner in which they should interact with the work. In this sense, the true intent of the document is disguised under the premise of being addressed to the gallery attendant.

One aspect of interaction design that I endeavour to avoid is the necessity to include instructions guiding the audience through an experience. The work should ideally be designed in a manner so that these strategies are unnecessary. Although *The Black Box Sessions* strove for this outcome, due to the complexity of the work as a whole, several indicators are situated within the gallery that either directly inform the audience such as the didactic signage, or indirectly, in the instance of the attendant's instructions[29]. These instructions are written to assist the audience to use the space and reaffirm that fact that one audience member should enter the performance space at a given time. The attendant's instructions are reprinted below.

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[29] Although equally complex, the following artwork *Häusliches Glück* (Chapter 5) required no further instruction as any necessary direction was inherently conveyed by the actions of the characters within the narrative.

The Black Box Sessions

- Turn on gallery lights and put the sign out.

- Open door for performer's Green Room (it's around in the courtyard).

- If a performer needs anything, try your best to accommodate them, otherwise call me! (0403193364)

- Inform audience members that they should wait until the light is green before entering the performance space.

- Remind audience **only one person at a time**.

- Also let them know that if they wish to view another performance, they need to leave the space and return when the light is green again. This will give the performers enough time to setup for the next show.

- In this particular setup, the peephole is at the far end of the right wall after they turn the corner from the entry.

- Useful numbers: Gallery Admin Ext# 1652,
  Security Ext# 1192

Thanks and have a delightful day!

-Alex

As the text indicates, the informal document is presented under the pretext of informing the gallery attendant about their daily duties, disguising the real message to be conveyed to the audience, reinforcing the presence of real performers, the location of the back stage access, and hints confirming how audience members should interact with the work.

4.4   Reflection

This section examines the design and implementation of the work in relation to audience response and poses possible variations and future directions. It outlines limitations that were revealed during the production process and continues with a comparative analysis of the various benefits and deficits of the design approaches undertaken in *The Black Box Sessions* in contrast to *Dislocation*.

4.4.1 Installation Design and Interaction

During the three public presentations audience members appeared to navigate the pitch-black space with relative ease, and more significantly, located the peephole quite intuitively (as it was the only point of light in an otherwise black space). I was initially concerned that this would not be the case during the third exhibition of the work because of the increased size of the performance space, however, the ability of the audience to navigate the space corresponded to the two prior presentations. This is clearly critical to the success of the work. The exit was posted with a luminous sign and this seemed to be a satisfactory indicator to navigate by.

The small peephole (approximately 30mm in diameter) provides a sufficient field of view to the screen without emitting excess light into the room. What scant light is emitted, however, did cause unexpected problems during the first exhibition. Within approximately two minutes some individuals' eyes adjusted to the minuscule amount of light present and were able to vaguely define the environment. This issue could be resolved in further development of the work by ensuring that both pupils of the spectator are exposed to light (only one eye adjusted to the darkness as the other pupil remained contracted due to light from the peephole) either through introducing a momentary light source to contract the audience's pupils again, using two peepholes in a stereoscopic configuration, or by re-designing the peephole to act as a more efficient light trap.

This posed less of an issue during the UTS Gallery exhibition due to the larger performance space (and therefore decreased reflected light).

Another issue related to maintaining a pitch-black environment is audience use of mobile phones as makeshift flashlights within the space.

Figure 46   *The Black Box Sessions,* audience member navigating the installation via phone light, HAIP 2008

Given the ubiquity of mobile phones, there was no way to completely address this issue other than removing the devices from the environment. There are several possible approaches to resolving this issue. One is to have attendants at the entrance to the installation mind the audience member's personal belongings as they enter the space. This option however is not particularly appealing from either the audience's perspective or that of gallery administration. As an alternative to this rather strict remedy, in all presentations of The Black Box Sessions, signage was placed at the entrance to the space displaying a 'no phone' icon (see Figure 46) This solution is less severe and works particularly well as a ruse in the context of the exhibition. The audience is already aware that the work is framed as a musical performance—a sign indicating 'no phones' is therefore a familiar sight within this context and does not create suspicion as to the actual motive. Audience members often encounter such signs and are accustomed to turning off phones in performance spaces.

While this does not guarantee the desired outcome with certainty, at a minimum, it discourages the use of phones within the exhibition space.

Figure 47   *The Black Box Sessions,* entrance to performance space with programmes and sign, UTS Gallery

When an individual attempts to confirm the presence of the virtual characters with their phone/lights during the course of a performance, it also raises some interesting questions regarding the manner that we experience media and human interaction on a broader level. While I am unable to objectively reflect on the experience of an audience member, it is worth considering that, generally, attempting to confirm what is witnessed on the screen may very well be disconcerting. The prospect of turning around with a light and *actually* seeing a person standing right behind you in the darkness could be quite confronting. In many respects the darkness and electronic mediation acts like an interpersonal safety zone that reduces much of the audience's social responsibility. If the characters are interpreted as real, opting to maintain this separation through darkness may in fact be preferable, depending on the individual.

It became evident that audience members generally require rapid visual feedback upon looking into the peephole (screen) in order to remain engaged in an environment that, for all purposes, is barren of stimuli. Simply *seeing* their own image was not enough for interest to be sustained. Several of the prototype scenarios made use of extended off-screen sound,

for example, the simulation of an argument behind a 'virtual door' outside the visual field of the display. Under these circumstances some audience members didn't wait long enough for the performer to actually enter the visible frame before departing the installation. One possible reason for this is that the off-screen sound is too subtle and realistically blends with the rest of the ambient sound and so might not be perceived as a significant component of the work itself. Another possible reason is that the use of this type of sound content alone, combined with the surrounding darkness, could not maintain the audience's interest for these periods of time (over a minute in certain prototype scenarios). Some form of visual activity was critical within the first few seconds when the audience member looks at the mixed reality display, even if the off-screen sound was independent of the initial visual feedback. Although a considerable proportion of individuals did remain, this factor caused the most significant interaction issue and was subsequently remedied after the initial prototype. The sound preludes are abridged in the current version, and most significantly, the usher character visually and aurally announces the performances upon entry, providing rapid feedback to the audience.

As discussed previously, context is a contributing factor to the plausibility and success in mixed reality illusion. It therefore stands to reason that overall presentation circumstances that support the framing context are more likely to assist in the overall deception. The first presentation of the work at HAIP festival was therefore more appropriate than the gallery context of AFO and UTS. At HAIP the work was placed in the context of a wider range of events that also included live performance and was therefore familiar and plausible. While it is still possible to succeed with the deception in a range of exhibition circumstances, the overall context in which the work is presented does facilitate the initial framing of the work.

4.4.2 Technical and Production Limitations

As the work was developed in a speculative manner certain production difficulties arose during the course of the process. It became apparent that several of the performers who collaborated on the project were very adept at performing in front of an audience, but had difficulty acting within an artificially constructed situation, with neither a stage nor an audience. In particular they demonstrated difficulty simulating action in a pitch-black room, (when the actual studio production environment was illuminated by thousands of watts of light). Some performers, however, found this fusion of performance and acting quite

natural. This, not surprisingly, highlights the importance of working with skilled actors in the creation of plausible, natural virtual characters that can convincingly engage with the simulated environment and their audience.

In regards to the foyer component of the installation, a more sophisticated approach would have been linking the activities in the green room directly to the subsequent shows in the performance space. For example, the audience would see a particular performer preparing back stage and, upon entering the performance space, the same performer commencing a show. Linking the activity between the two rooms would have comprehensively addressed continuity within the virtual elements throughout the installation. This could be achieved by linking the two computers (backstage and performance space) over a network and updating the software so that each system is aware of the current state of the other and can therefore deliver the appropriate media. This was not undertaken, however, as half the performers were recorded in Austria and it was simply not possible to fly them to Australia for the green room production update. Instead, a range of local performers occupied the room and enacted more general and open-ended scenarios.

4.4.3 Comparative analysis with Dislocation

Although *The Black Box Sessions* and *Dislocation* employ many of the same techniques of illusion, they are manifest in distinctly different ways. Following is a comparative analysis of the strengths and weakness of both approaches to installation design based on multiple public presentations of both works (particularly concerning the characteristics of *The Black Box Sessions* performance space). Neither of these should be deemed as right or wrong approaches to perceptual and social realism in mixed realities. They simply afford the audience differing experiences due to their inherent structure.

Visible environment vs. pitch-black environment

The pitch-black surrounds of *The Black Box Sessions* performance space theoretically has the potential to extend the duration of the illusion indefinitely if all contributing factors are perfectly resolved, i.e. the potential exists for the audience to never become aware that they are encountering a computer agent. Although this benefits the illusionary aspects of the work, it also impacts the way in which the audience experiences the installation as a

whole, and in conjunction with other factors (outlined below) limited the overall sense of playfulness evident in *Dislocation*.

Darkness in *The Black Box Sessions* offers greater scope for employing sound than in *Dislocation*. The audience's loss of their primary sense of (non-mediated) sight results in a greater reliance on sound to decipher their surroundings. Moreover, the environment offers greater flexibility in the location of the speakers without the need to disguise this aspect of the mechanics.

Multi-user environment vs. single user environment

Although the deception is rapidly revealed in *Dislocation*, one of the key ways ongoing interest and engagement is maintained is the interaction between audience members and the interactions between audience members and the virtual characters. This combination provides a rich foundation for compelling interaction primarily due to the complex and infinitely variable responses of the audience, more than is possible in an individual response. The same sense within a multi-user space is evident in works such as Antony Gormleys *Blind Light* [Gormley 2007] and Kurt Hentschlager's *ZEE* [Hentschlager 2008]. It is not only the sense of helplessness that is significant in these works but the charged tension of a chance physical encounter with another human.

The Black Box Sessions was designed for a single audience member, in order to circumvent the audience/agent collision issues discussed previously in this chapter. As such the work affords an entirely different and solitary experience to *Dislocation*. Although compelling in its own right, it lacked the sense of playfulness and social interaction that was evident in *Dislocation*.

Multi-user interaction within *The Black Box Sessions* performance space could be made possible with the introduction of more viewing stations. Beyond adding another layer of complexity in the audience experience, it would enable one of the more unusual aspects of audience experience evident in *Dislocation* whereby audience members perceive real people as computer agents. The foyer component of the work to some extent addresses the need for multi-user interaction, but the foundation of the work, the performance space, nevertheless remains a solitary experience.

In order to pursue a multi-user approach in *The Black Box Sessions* additional development would need to be undertaken on collision systems that would visually cater

for the intersection of virtual characters and audience members so that the illusion is not broken. Addressing the issue of intersections would pose less of a necessity in a substantial presentation space, but due to the small size of the installation space (constrained by the initial exhibition space of the prototype) intersections would most likely be frequent and perceived by the other spectators. One method to address this issue could be the application of multiple cameras so that when a virtual character and audience member inappropriately intersect, a different camera perspective is selected that maintains the illusion while being familiar and appropriate in the context, particularly if varying perspectives are randomly switched throughout the viewing experience even when intersections do not occur.

Short avatar sequences vs. long avatar sequences

Dislocation presents audiences with a series of short sequences while content in *The Black Box Sessions* is made up of longer performance sequences. Performance durations in *The Black Box Sessions* were primarily dictated by the musical accompaniment that most performances contained. The only drawback to these longer durations is the fundamental challenge of maintaining an audience's interest. This issue is not specifically related to *The Black Box Sessions* but occurs in all instances involving a spectator's experience of temporal work. Engagement with the content of a particular performance is more a matter of personal taste. This is rarely an issue in *Dislocation* due to the varied nature of the content. Even if a specific scenario does not resonate with a particular audience member, it is promptly replaced with a new one.

In addition to the visual sequences presented, the use of audio preludes differs between the works. Although off-screen sound is employed in *Dislocation* it is brief, much like the visual sequences. The audience can hear activity before and after the virtual character left screen space, however, this occurs a natural way, simulating the sound of someone walking in and out of a room. Leading sound is employed primarily as a tool for continuity in *Dislocation* and works subtly rather than as a key element to expand the narrative. In contrast, off-screen sound in *The Black Box Sessions*, used as a prelude to the performances, is intrinsically part of the dramaturgy. Although this has potential to add complexity to the overall experience of the work, it also creates interactivity issues indicated in the previous section (4.4.1 Installation Design and Interaction).

Although both works to some extent offer an equal amount of diversity in the situations presented, *The Black Box Sessions* performance space only enables the audience to experience one of these at a given time. Unlike *Dislocation*—which affords the audience a consistent stream of new and unexpected content—*The Black Box Sessions* is programmed around the premise that each audience member is presented with one performance only, and the environmental sensors only reset the system upon entry of a new visitor. This limits the audience experience of the work to a single encounter with defined beginning and end points. This fixed encounter approach was chosen to encourage a greater throughput of audience members considering that the performance space only caters for a single individual at any given time. The downside of this, however, is the inability of audience members to remain and continue to interact with the work. To do so they would have to vacate the performance space and then return for a new selection. As is often the case there are trade offs with any given choice and, in this instance, constraining visit time to encourage audience throughput leads to a somewhat diminished control over the experience for the audience.

In contrast *Dislocation* has no beginning nor end and in no way attempts to control the duration of a visit. The perpetual structure of *Dislocation* moreover serves the function of maintaining continued interest. The uncertainty of what is to follow is a vital aspect in ongoing audience engagement. At *Dislocation* in Sydney[30], when asked 'why did you stay after the initial illusion was broken?', one individual responded: 'I wanted to see if there were more virtual characters and if there was some kind of story being played out'. Another answered: 'To see what other characters would walk in' and a third: 'To see the reaction of the visitors'.

After the initial *Black Box Sessions* prototype additional content was added and the experience was restructured to address these deficiencies. The changes provided the audience with unexpected encounters combining long and short dramatic sequences. They include the addition of the usher and random sequences of technicians, attendants, and lost audience members entering the space. The construction of the foyer environment additionally offers a continuous series of media experiences within the installation as a counterpoint to the constraints imposed within the performance space.

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[30] *Dislocation* exhibited at *Trace Elements*, Performance Space, Sydney, Australia (January 2009)

4.5   Conclusion

This chapter has demonstrated how *The Black Box Sessions* applies psychological principles of deception derived from conjuring within a mixed reality context. It further demonstrated how media arts technologies can be examined through the lens of magic, the principles of which can be used to conceal deficits in the medium, or enhance attributes that need to be brought to the fore.

The third (and possibly final) iteration of the work, presented at UTS Gallery, exceeded my expectations regarding the success of the illusion. While no comprehensive empirical study was undertaken, based upon incidental conversations with audience members at the gallery and subsequent to the exhibition, the installation deceived a large number of spectators.[31] These individuals were absolutely certain that real performers were present at various times during the course of their encounter and even long after leaving the gallery. Although this was the primary aim of the research, I never expected that the numerous complex elements required would harmoniously work together to actually achieve this end. I was always conscious of every single flaw in the illusion's mechanics. Despite these issues, for some individuals, the work crossed over the threshold of believability. In many of these instances the virtual characters managed to elicit a response from audience members when directly asked questions. As this was one of the primary points of investigation and a possible indicator as to the success of the illusion, this outcome is very promising. One of the challenges for future endeavours is to determine how this dialogue can be sustained for longer durations whilst employing the same approach to socially real agents with pre-determined behaviours.

One audience member contacted me after the UTS Gallery exhibition and stated in good humour 'I am embarrassed to say, I did start talking back at one of the performers. I was convinced they were really in the space!' She had encountered a scenario with Patrick Huber in which he criticises the audience member throughout the show for their lack of respect of him as an 'artist'. In a later conversation the audience member stated that she had engaged in conversation with him during these exchanges only to establish his absence

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[31] While there are various formal methods that could have been used to gauge audience response to the work (surveys, focus groups, interviews etc.), I used a very casual participant-observation approach that involved spending time in the gallery without making it explicit that I was the artist. Because the installation was designed to deceive audience members, I felt that any other method would have disrupted their experience. While the evidence collected is not empirical, it is particularly valuable to my understanding of audience experience.

later with the light on her phone. The nature of the conversation was that she was not being disrespectful but that his performance was in fact not good enough to warrant his inflated sense of self worth. It is not at all surprising that the character that deceived her was Patrick Huber. While in many respects his performances could be considered some of the least entertaining sequences, his character displays the highest level of social realism and for this reason are my favourite performances in the work. His simulated sightlessness within the darkened space is impeccable, and throughout his performances, he continuously interacts with, and questions, the spectator, never really giving them a chance to position themselves as passive observers. An example of Huber's behaviour can be seen in Figure 48 in which he is seen entering the performance space by feeling his way along the wall. This action was, of course, executed within a studio, but once composited into the live video, he appears to be haplessly negotiating the actual wall of the installation space.

Figure 48   *The Black Box Sessions,* Patrick Huber's entrance into the performance space

Huber's presentations swing from the banal to the absurd but are conveyed in such a natural manner that they are considered plausible. It is precisely these attributes that make this type of content such an effective deception. Unfortunately the reason I appreciate these sequences—for their capacity to provide convincing illusions—is the very same

reason they may not be considered the most entertaining for audiences, in contrast to a seductive strip tease from Annabel Lines for example. Being confided in and simultaneously berated by Huber is undoubtedly not a compelling prospect for many audience members.

Judging from positive audience feedback and press (see Appendix IV), audience members who were never deceived by the illusion nevertheless found the experience engaging. In this respect, the illusion conformed to the initial framing ruse of being a novel means to view a performance mediated via technology, the only difference being the absence of the 'live' human aspect. The fact that it *was* a simulation proved equally compelling. While these audience members were not deceived by the illusion, they were certainly willing to suspend disbelief during the encounter.

These responses in many respects are not surprising since, on a fundamental level, the environment and content are the primary factors shaping audience experience. Whether the content is presented by a live human or a computer agent simply adds another layer of complexity to the experience. It shifts the audience's relationship to the performer from one corresponding to live theatre, or, conversely, it elicits a response similar to the way in which we engage with mediated characters in cinema.

This analysis of *The Black Box Sessions* in terms of the mechanics and showmanship of an illusion shows that techniques of illusion in magic are not only very relevant in media arts but provide an alternate perspective for approaching illusion in mixed realities. As discussions of the foyer space demonstrate, a significant aspect of the third iteration of the work is an exploration of how the design of different spaces within spaces can enhance an illusion. This was also a primary research concern in the artwork *Häusliches Glück* discussed in the following chapter.

Chapter 5: Häusliches Glück

A fun house is a movie made into a machine that you travel through.
[Murray 1997: 107]

5.1   Introduction

This chapter examines the second research project, *Häusliches Glück*, in terms of the creation of illusory presence in mixed reality installations.[32] While the design of *Häusliches Glück* employs some of the methods discussed in Chapter 4, it also suggests alternate approaches to those deployed in *The Black Box Sessions* for developing illusion in mixed realities. Specifically, *Häusliches Glück* adds to methods of deception already discussed through the inclusion of narrative structures and substantial environmental augmentation with mechanical devices. This chapter begins with an overview of the work and development processes. It then examines approaches to illusion in terms of physical devices (mechanics) and misdirection (the underpinning psychological principles of conjuring). This is followed by a detailed investigation of the work's two narrative scripts in order to offer insight into the spatial dynamics of the audience experience. The chapter concludes with a comparative analysis between *Häusliches Glück* and *The Black Box Sessions*.

You enter the apartment and look around. The rooms appear to still be inhabited. Artefacts from recent human activity are present everywhere: partially prepared food on the kitchen bench top, freshly washed laundry hanging out to dry, an open magazine on the sofa, a television left on in the corner. This place looks lived in. This is an exhibition space, but it feels as if you have walked into someone's home. Where are the inhabitants? What happened here? You hear noises from a back room. As you draw closer, you notice the door is ajar but partially blocked by a cupboard from the other side. You hear voices. A shadow darts across the wall inside the room. You strain to look into the space, but can only see a fragment of the room. You continue to eavesdrop on the conversation that is taking place, and notice that the old television beside you flickers with a grainy black and white image of the room behind the cupboard. A great commotion suddenly occurs from within the room. You hear a crashing sound and, glancing across at the television, see the action unfold within the room. You realise that what you're actually viewing on the screen

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corresponds with the activity you can hear within the room... A phone rings in the lounge room. Although you are compelled to stay and find out what is happening behind the blocked doorway, you momentary pull yourself away to answer the call. A flustered voice anxiously gives you directions down the phone line. The line goes dead…

Häusliches Glück is an installation in which audience members unwittingly find themselves at the centre of a story unfolding around them. The work combines techniques of mixed reality, physical narrative and cinema. Pre-composed sound, video media and mechanical devices are used in combination with the recreation of a 1950s style working class apartment in Linz, Austria, to form a series of convincing illusions. The installation offers a range of experiences to audience members drawn from a series of narratives that are presented via a television simulating a live video feed from the adjoining room. The entire apartment is augmented by sound and image technologies that create the illusion of these events occurring 'live'. Drawn in by the intimate reality of the deserted apartment, visitors transcend the experience of being bystanders, becoming active participants in a layered set of narratives. The documentation of two murders in 1957, unfolding in the present moment, creates a contradiction of the senses.

Figure 49   Hausliches Gluck, installation detail with audience member in bedroom

Häusliches Glück was exhibited in a dilapidated first floor apartment in Linz from July to September 2009. The work was developed in conjunction with Time's Up, specifically with Andreas Mayrhofer with whom I worked closely during development and production of the work. It was presented as a commission for the 2009 EU Culture Capital as part of the *Haus Der Geschichten* (House of Stories) project.[33] *Haus Der Geschichten* exhibited the site-specific work of various artists in an old vacant apartment building in downtown Linz throughout 2009. The central idea was to convert disused urban space into 'a setting for stories: of wonderment, invention and drama [Linz09 2009].'

Figure 50   *Häusliches Glück* - Pfarrplatz 18, Linz, *Haus der Geschichten* location

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[33] 'Haus Der Geschichten' is translated as 'House of Stories' but 'Geschicten' can also mean 'history'.

The overarching narrative of the installation can be broken down into two distinct acts. The first act is set in 1957 and presented by a narrator who appears to be located in a room adjacent to the audience. The two additional characters in the story, Wilhelm (the victim) and the unnamed killer, play out their roles throughout the apartment via sound, image and mechanical devices.

Figure 51   *Häusliches Glück*, video still from Act 1, Wilhelm entering the bathroom

The second act is designed to seamlessly transition from the first and is a counterpoint to the preceding drama; it is firmly placed in the present moment and the context of the exhibition space. Two exhibition attendants enter the room that the narrator previously occupied and proceed to dismantle the installation. Each act employs different framing contexts to examine deception within the mixed reality installation.

Figure 52   *Häusliches Glück*, video still from Act 2, Linz09 gallery attendants

The work was developed on site over two months leading up to the public exhibition opening. Two acts combine to an overall duration of approximately thirty minutes. A script for Act One was developed in the murder mystery genre and shot with three central characters. A loose script was developed for Act Two, defined around key points of drama that enabled the two actors to improvise the scene. The apartment was intricately dressed and artefacts were precisely maintained for the public presentation period so that they would match the pre-composed video content. In addition to the media content, all these physical elements enabled the audience to construct their own stories based upon the artefacts they encountered and directly reinforced the pre-determined narrative in Act One.

Figure 53   *Häusliches Glück*, entrance/ kitchen before & after installation

Based on the content of the scripts, actors were shot using CCTV cameras located in the rear room (obstructed by the cupboard) and the bathroom. The rear room was subsequently emptied and used as a machine room (housing the technology) for controlling the rest of the installation space. Props from the shoot (books, furniture, paintings etc) are maintained within the narrow sightlines between the cupboard and door jam. However the rest of the room is completely replaced with the controlling technology.

This is the first instance of deception in the work. The cupboard not only provides a physical space where the virtual characters can exist, it also functions to conceal the underlying technologies. Following is a discussion of these technologies.
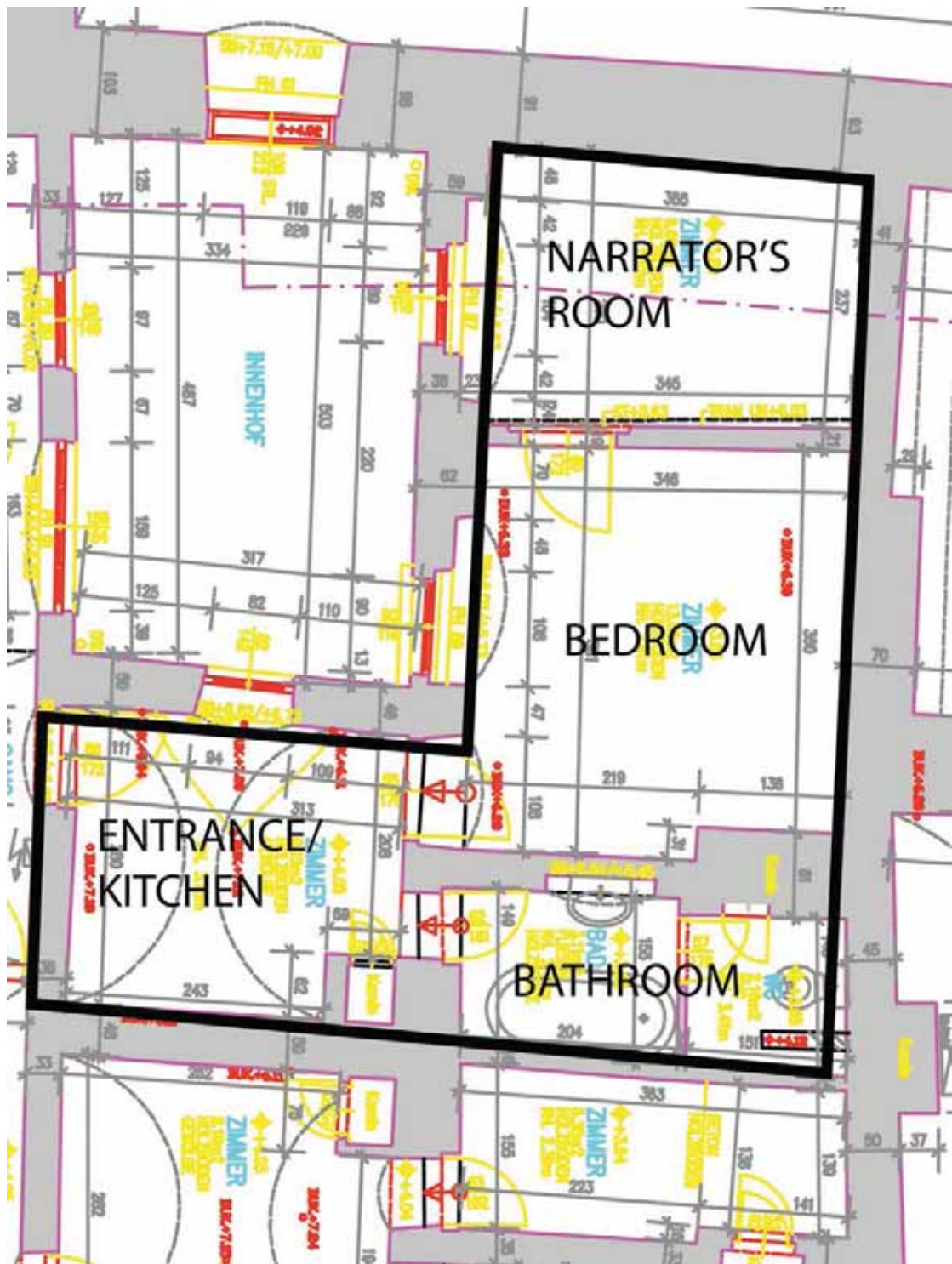
Figure 54   *Häusliches Glück*, installation floor plan

5.2 Mechanics

This section examines key technologies that are used to augment the installation environment. In context of the research aims, it explains how and why these technologies are employed. [A more detailed examination of the use of these devices within a temporal context will be referred to in the Narrative Analysis section].

Various technologies are used in the work to create the virtual characters and, additionally, to support the physical actions of those characters. In the first act, these technologies convey the story presented by the narrator and in the second act they support the characters' decisions and actions (i.e. the virtual characters actions are consistent with the environmental stimuli). A range of technologies are implemented to achieve a cohesive illusion throughout the whole apartment. Put simply, everything that is described via the narrator in the story simultaneously occurs spatially in the apartment via sound, video, lighting, and mechanical devices. In such a polysensory environment it is important that each modality works in unison because, as Anderson contends 'when we perceive multi-modally, we seek the invariant properties of an event across modalities [Anderson 1996: 86].' *Häusliches Glück* not only utilises a wide range of technologies but does so in a globally consistent manner to reinforce the illusion.

5.2.1 Audio

Audio is a central device for establishing illusion within the installation. While the television image presents a compelling focal point for the narrative, sound contributes to spatial awareness of virtual characters throughout the apartment.

The placement of sound within the installation is analogous to off-screen sound in cinema. However, rather than just representing action in an abstract location beyond screen space, sound emanates from points in the apartment outside the audience's sightlines, and is linked to specific physical locations within the apartment. Both these applications of sound achieve the same pronounced effect, creating an imaginary presence beyond the user's immediate visual awareness. To implement this sonic landscape, speakers are concealed at key locations in the installation where narrative activity occurs.

The overall approach to sound design is similar to that used in cinema. The elements consist of atmospheres, sound effects and dialogue. Levels are adjusted assuming primary audience listening position being in the bedroom (the location of the television and the adjacent narrator's room). Because of this, sound levels throughout the rest of the apartment are not always true to reality, even though in context they appear balanced from the bedroom. Although this approach may seem counter intuitive for a work based on the perceptual illusion of realism, as is often the case with hyper real sound in cinema, the result is commonly perceived as more accurate and naturally balanced than real life [Holman 2002: xvi]. Indeed, a study conducted by psychologist Laurie Heller indicates that, depending on the specific sound, up to seventy percent of individuals perceived simulated foley sound as 'more realistic' than the corresponding sound generated by the real event [Heller 2002].

Following is a list of the six speakers employed throughout the apartment and their function in terms of supporting the live narrative.

1. *Radio*: (Figure 53) The internal speaker of the radio is used to present diegetic sound for the installation. Although the device gives the impression of an old wireless unit from the turn of the century, it is in fact controlled via the software and wired to the central amplifier point in the control room. Diegetic sound is a particularly useful approach to illusion as, by its very nature, it is associated with a device that is commonly used to generate sound. Familiarity and consistency therefore reduce suspicion. In this

instance, using such a device eliminates the need to disguise it, while, at the same time, supporting the framing context of the narrative.

Function: Atmosphere is created through diegetic sound directly related to the narrator's story. As the narrator describes this element of the story, the radio crackles to life and music fades up and continues for the duration of Act One.

The musical accompaniment is drawn from the 1957 Eurovision song contest and creates a whimsical counterpoint to tension developed in the rest of the narrative. Musical accompaniment from the radio also provides continuity for the work as a whole by assisting in fluid transitions between the two distinct acts.

Figure 55   *Häusliches Glück,* radio

2. *Kitchen*: (Figure 54) A speaker is concealed within the kitchen cupboard behind a range of kitchen implements.

Function: This speaker is used to represent narrative elements that occur in the region of the entrance and kitchen. Sound is panned from this point to speakers located in the bathroom and bedroom to indicate movement of virtual characters when appropriate (footsteps, for example). Additionally it is used to represent point sources of sound occurring at that specific location, such as when Wilhelm is rummaging through the drawers to find candles.

Figure 56   *Häusliches Glück*, kitchen speaker (in cupboard)

3.   *Bathroom*: (Figure 55) A speaker is concealed near the ceiling on the top of the water heater in the bathroom behind a rag and stack of old newspapers. A second speaker is concealed underneath the bathtub.

Function: The speaker located near the ceiling is used momentarily in the first act to represent activity from the upstairs neighbours and, therefore, is very specific in its function. The second speaker underneath the bathtub presents all other activity that occurs within the bathroom.

Figure 57   *Häusliches Glück,* bathroom speaker (above water heater)

4.   *Windows*: (Figure 56) Speakers are concealed within each of the apartment's three external windows. Shutters and curtains are added to the interior of the window frames to conceal the devices from the audience and, similarly, curtains are used to conceal them from the outside of the apartment.

Function: All three speakers are used to represent the world beyond the confines of the apartment. This includes environmental elements that occur during the narrative such as rain and human activity from other imagined apartments in the vicinity. For instance, the sound of neighbours arguing can be heard in the distance.

Figure 58   *Häusliches Glück,* window speaker

5.   *Narrator's Room*: (Figure 57) In addition to the window speaker located in the narrator's room, one additional speaker is located centrally within the room[34]. As with all the other mechanical elements present, this is concealed (in this instance, by the cupboard).

Function: The speaker conveys sound related to any activity that occurs within the room such as the narrator's monologue, footsteps or simulated glass smashing. As the sound is filtered via the cupboard and indirectly heard by the audience at a distance, the single speaker is capable of producing enough spatial resolution to cater for all these dramatic elements convincingly.

Figure 59   *Häusliches Glück,* narrator speaker located above cupboard

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[34] Throughout the course of the exhibition the narrator's speaker was repositioned several times until its optimal position (in terms of realistic sound presented to the audience) was found to be above the cupboard.

6.   *Phone*: (Figure 58) A phone located in the bedroom was rewired and is controlled via computer to ring, and, if picked up, to voice a response.

Function: The phone is used as a plot device in Act Two. It is triggered to ring during the narrative. The virtual characters encourage the audience to assist them (i.e. by answering it). Depending on the audience's actions, the narrative goes off on one of two paths. If an audience member picks up the phone at any other time, they are presented with a dial tone, then the phone seemingly commences an auto dial and, after ringing for a short time, is answered with a randomly selected recording of a confused woman who has been woken from a deep slumber by the call. The woman, with some irritability, quickly terminates the conversation.

Figure 60   *Häusliches Glück,* phone in bedroom

5.2.2 Video

The actors were shot with CCTV cameras located throughout the apartment, one in the rear room, one in the entrance/kitchen and one in the bathroom. These three cameras remain as props in the installation to reinforce the illusion. When a character can be seen walking into the bathroom, for instance, the aim is that the audience interprets this action as occurring live via the camera they noticed earlier, not pre-recorded. As discussed in Chapter 3, the audience's relationship with ubiquitous surveillance technologies greatly enhances the power of this suggestion. Here, the effectiveness of the video image lies in the knowledge of its potential more than for its actual function. Unlike *The Black Box Sessions*, the use of the cameras is suggested during the course of the exhibition, they are no longer active after their initial use during production. Conjurers often rely on the strength of an audience coming to their own conclusions via suggestion. This takes advantage of 'the spectator's misplaced confidence in his own ability to arrive at the correct solution' [Macknik, Martinez-Conde et al. 2010: 143]. Through the discreet treatment of cameras the audience makes the connection between the cameras and screen content by their own accord. As this connection is not made explicit by the artist, suspicion is reduced.

Video technology is used to convey the illusory sense of virtual presence in several ways. The image on the television forms the central focal point of the illusion and a range of other techniques are employed to support the image presented on screen.

Figure 59   *Häusliches Glück,* television in bedroom displaying 'CCTV' video

The apartment contained three CCTV camera's mounted in discreet locations within the entrance, bathroom and narrator's room. While the camera's presence is unassuming, there was no attempt to completely conceal them, as the audience must believe these cameras are presenting 'live' video feeds to the television.

The low-resolution aesthetic of the image presented on the television is therefore interpreted as normal and consistent with audience's expectations of the visual appearance of CCTV cameras (previously mapped out in Chapter 3). The presence of cameras however is out of character with the rest of the environment's design, as all other artefacts are located within an earlier time period. These disparate objects innately draw attention to themselves in the context of the surrounding environment and aid in creating a false frame of reference, an expectation that the audience are viewing live events on the television; a mediated performance in the first act, and reality in the second act.

Figure 61   *Häusliches Glück,* camera location in kitchen (behind lamp)

The visibility of the camera is particularly important in the narrator's room (Figure 62), as this is one of several indicators that the characters in the room are being transmitted live to the television. The camera is visible through the narrow gap in the door that is otherwise obscured by the cupboard. The audience's sight lines into the room are heavily controlled and very few artefacts are visible in this section of the room, further drawing attention to the device. The camera is mounted in a prominent position in the corner of the room, so when the audience peeks into the room, they see the CCTV camera, hear the character from within the room, and see the 'live' image on the screen. The combination of these elements, in addition to the mechanical devices creates a palpable sense of human presence.

Figure 62   *Häusliches Glück*, audience sight lines to the narrator's room (camera top left)

In the development stages of the installation, video played a more pronounced role in the deception than in the final presentation. The concept was to employ the CCTV cameras to transmit live video of the installation space and audience. This content would be interspersed with the pre-recorded narrative. As the camera's image quality and angle would be the same for both the live and pre-recorded material, the transition between the real and virtual humans would be seamless.

The premise was that the audience would see themselves or other audience members on the screen and establish a connection between real and virtual entities. For instance, an audience member watching the television would notice another audience member enter the apartment via CCTV. They would be aware of the physicality of this person in their peripheral vision, and see them enter the bathroom via the second camera. The television image would then cut back to the narrator and shortly after cut back to the bathroom where the virtual character Wilhelm would enter. Due to the time that would pass between the initial audience entrance in the bathroom and the virtual character's entrance, broken sight lines and camera framing, the second audience member would be perceived as having exited the bathroom, or may simply be off camera. The deception would have therefore been coherent and would not induce suspicion. The physical presence on screen would have justified the corresponding virtual presence by combining the two elements within the same context.

This technique would have had one of two possible outcomes depending on the audience's interpretation of the illusion; either it would offer a sense that the audience member on screen was transported to another place; or that the virtual characters were co-existing in the same space with the audience. The aim was the latter, as this would have reinforced the live nature of the virtual events presented.

Although I believe this would have provided a valuable method in establishing the illusion, the live camera switching was removed from the work because, when put into practice, it appeared to significantly disrupt the narrative flow. Any gains in deception would have been equally lost in conviction and this trade off was not satisfactory in this particular instance.

To summarise, video technologies are used in conjunction with other devices as a means to support the two narratives presented and develop the illusion of virtual characters coexisting with the audience. The audience's preconceptions concerning the technologies

themselves are exploited and aid in the establishment of appropriate framing contexts required for a successful illusion.

5.2.3 Physical Elements

Häusliches Glück employs a range of mechanical devices activated during specific points in the narrative when it is appropriate for the actions of the virtual characters to be physically manifest within the environment. These devices are used in conjunction with the visual and aural elements to create a more cohesive illusion. The addition of mechanical elements in the work plays a significant role in the perceptual realism of the virtual characters through multimodal reinforcement, the illusory sum being greater than the parts. The mechanical elements also shift the focus from simulating agents via the abstract elements of sound and image, to events that physically occur in the environment. The actions of virtual characters therefore have tangible physical outcomes in the real world. In terms of illusion, perceptual realism will inevitably have a more pronounced and plausible effect if the object itself achieves it, rather than by simulation, no matter how sophisticated. For example, why simulate the sound of a person moving a cupboard when the audience can experience the cupboard physically move? Mechanical devices therefore assist in convincingly bringing the characters from the virtual world to co-habit real physical space with the audience. Additionally, mechanics are employed to develop the *mise-en-scène* of the installation as a whole.

Just as sound plays a crucial role in the spatial representation of the narrative, so too does lighting. Every lighting element in the installation is directly linked to the narrative and controlled via software. Lighting fixtures in the apartment are re-wired to a DMX lighting dimmer and controlled in relation to the story elements. In addition to the visible elements in the apartment such as ceiling lights and lamps, lighting is also concealed within the window shutters to simulate lightning, and within the narrator's room for specific effects.

The lighting elements are therefore experienced directly (ceiling fixtures and lamps) or indirectly (obscured lighting events occurring in the narrator's room), analogous to the way audiences perceive on-screen and off-screen elements in cinema, yet, in this instance, occurring in physical space.

Figure 63   *Häusliches Glück*, bedroom light, rewired to DMX controller

Each apartment window is comprised of several layers as a concealing device to create the deception. The first layer are curtains that convey a normal appearance when viewing the apartment's exterior from the atrium; the second layer is black felt to block light ingress and establish control over the apartment's ambient lighting; the third layer is a reflective film to enhance the artificial lightning; then the lamp (and speaker in the same cavity); a white curtain to diffuse the light and conceal the devices; and finally shutters that are secured shut to avoid tampering. This material sandwich successfully conceals the mechanics of the illusion outside and inside the apartment by presenting a natural and familiar façade.

Figure 64   *Häusliches Glück*, courtyard showing window exteriors concealing internal mechanics

Compact fluorescent lamps contained within the window cavity are controlled via custom software to simulate a range of lightning (i.e. thunderstorm) sequences.[35] The lamps are a bright white colour temperature of 3500k in contrast to the warmer tones emitted from the incandescent lamps in the rest of the apartment.[36] The same lighting control software is used during production and exhibition so that the physical and virtual content can be synchronised. The lighting sequences that occur in physical space therefore directly relate to the lighting represented on the television image (as the audience is meant to believe that the cameras portraying live events are within the same physical space).

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[35]   Strobe lights were the initial logical choice for lightning simulation within the window enclosure however due to the clicking noise produce by the flash tubes they were deemed unsuitable. The positioning of the lamps meant that this sound could not be readily concealed resulting in attention being drawn to the mechanics. They were replaced with a silent alternative.

[36]   After multiple lamp burnouts during the course of the exhibition (while the CFL globes responded to the rapid lightning simulation, they were not designed for this purpose), the lamps were replaced with halogen globes combined with corrective gels to achieve the same effect.

Figure 65   *Häusliches Glück,* lightning simulator in window cavity

In addition to lighting that encompasses atmospheric elements inherent in the narrative, lighting also represents actions directly related to the activity of the virtual characters. Three other lighting elements are located in the narrator's room and therefore are not directly visible to the audience. As these lighting effects are experienced emanating from the inaccessible room, they can present an accurate simulation of reality. The audience is not in a position to confirm the presence of individuals within the room controlling the lighting changes, only the results of their actions. These items include a floor lamp, flashlight, and a lighter, the use of which will be discussed in detail within the narrative analysis section.

While lighting has a pronounced effect on the atmosphere of the installation, and therefore significantly contributes to conviction in the work, by its nature, it is still somewhat intangible, much like the characteristics of sound in the work. Although both highly effective in their own right, these devices do not have the same visceral impact that a physical object would impart.

To further enhance the influence of virtual characters in real physical space, the cupboard is called into play. It is not only used to obstruct audience access to the room, but also conveys the actions of the characters by mechanical means through motorised

control. [See the following Narrative Analysis in section 5.4 for a detailed examination of the use of these physical devices as mode of deception].

Developing any complex electronically mediated environment has the regrettable by-product of producing a mass of signal and electrical cabling. While this does not often pose a significant concern in many exhibition scenarios, to develop the illusion in *Häusliches Glück*, it is critical that these elements remain invisible. The primary concealing device used to overcome this issue is carpets. Carpets enable the majority of cable to be run from various points in the apartment to the central control area (in the narrator's room), and become an appropriate device in the context of the installation. They are an intrinsic element of the décor and their presence is therefore justified and consistent with the framing context. As a concealing device they do not raise the level of suspicion. Where it is not possible to use carpets, cables are run in conjunction with existing cables in the space (that is, old telephone lines or power cables) or concealed behind furniture and drapes. The only cables evident are ones directly linked to the narrative, not those mechanically supporting the illusion.

Figure 66   *Häusliches Glück*, window cables exposed (top) and concealed (bottom).

While disguise of visual elements is central to conjuring and is similarly necessary for illusion in mixed realities, disguise is also required to minimize any incongruous audio elements of the work. Just as ill-placed cables have the ability to detract from the illusion, so do unwarranted sounds. A range of motorized devices is used to augment the environment. The goal is that the audience perceives the effect of these devices, but not the device itself, for example, seeing the cupboard shake or the flashlight sweep around the room, without the artificial whirring of motors. Both these elements are soundproofed, the servo mechanism for the flashlight via a transparent dome that transmits light yet no sound, and the cupboard motor in a sound proof box[37]. The creaks and clunks of the cupboard moving additionally aid in masking the motor sound when activated.

Figure 67   *Häusliches Glück,* sound treatment for cupboard shaker motor

Figure 68   *Häusliches Glück*, sound treatment dome for flashlight servo.

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[37] Thanks to Marc 9 and Markus Luger for elegant and effective solutions to these problems.

5.3   Misdirection

This section examines how the psychological principles of deception employed in magic are used in the work and how these techniques contribute to the palpable sense of virtual characters occupying the installation space with the audience.

5.3.1 Framing context

As discussed previously, appropriate framing is central to the success of an illusion. *Häusliches Glück* combines several framing contexts to achieve the desired illusory outcomes. The first is inherently part of the gallery-based experience, the subsequent two are systematically constructed via the mechanics and content to establish a deliberately ambiguous context in which the work is interpreted.

The installation was presented over a three-month period in 2009 as part of the *Haus Der Geschichten* exhibition. In terms of audience experience, the work was therefore framed, firstly, as an artwork presented in the site-specific context of an old apartment building. Beyond this fact however, the audience was not aware of the specific nature of the work. The catalogue publication and promotional material were intentionally vague and did not convey any detail as to the type or content of installation. Audiences therefore encountered the work with few preconceptions.

Figure 69   *Häusliches Glück,* apartment /installation entrance (left door)

Upon initially entering the work, the framing context of *Häusliches Glück* becomes even more ambiguous as the narratives consist of several discreet and shifting framing contexts that are revealed as the work evolves.

On one hand, the work is framed as a spatial cinema installation in which the narrative elements are clearly fictional (displaced in time for instance). On the other hand, as the narrative unfolds, certain aspects are framed to give the impression that the characters presented are in fact real and physically present (i.e. actors presenting the work live). This tension between the two forms of illusion (the deception of the conjuring trick and suspension of disbelief) causes the audience to continuously re-frame and question their relationship to the media. Act Two, the second narrative component of the work is framed as a counterpoint to the overt drama of the first narrative. Rather than sharing the apartment with a murderer from the 1950s, the audience is again transferred to the present and encounters two gallery attendants co-inhabiting the space. The banality of these characters and their actions separate them from the previous content and reframe the experience as present reality (similar to the framing inherent in *The Black Box Sessions*). Rather than willing the audience to suspend disbelief, the presence of these virtual characters is articulated as fact with the aim of being interpreted as such.

5.3.2 Consistency

Häusliches Glück, as a narrative driven work, requires consistency in characterization and the broader environment in order to create and maintain a convincing illusionary space. Consistency is addressed within each scene and across the work as a whole.

In the first act the characters' actions are consistent in a similar manner to the traits of cinematic or theatrical actors. Their motivations and actions are in accordance with the heightened sense of drama presented. In the second act, the characters are designed to display normal and appropriate behaviour for gallery attendants. Consistency of character enhances the perceptual realism of the scene and opens the possibility for the deception to occur.

In summary, the actors behave like actors in a fictional drama, and the Linz09 characters behave like gallery attendants. Although each act relies on consistency of characterization to develop the illusion, the first act does so to foster suspension of disbelief, and the second to deceive the audience.

5.3.3 Continuity

Continuity is the sequential flow of narrative events, in other words, the consistent arrangement of events in a logical manner. The principle of continuity in magic and cinema are equally applicable in the domain of mixed reality as a means to maintain audience interest and reduce suspicion through the removal of incongruous elements. Continuity is an integral part of illusion. If the sequence of events defy logic and confuse the audience, the next step of the story in cinema, or the performance in conjuring, will be missed. Interest is reduced when this occurs, suspension of disbelief is diminished in cinema, and deception is jeopardised in conjuring. Disruptions in continuity are specifically avoided in *Häusliches Glück* and influence the way in which the illusion is implemented (such as the final approach to the use of CCTV technology discussed in the prior Video section).

Continuity within *Häusliches Glück* can be examined within each act, and also in terms of the dynamic flow of the installation as a whole. Act One demonstrates a linear narrative that follows the fundamental principles of structure found in a magic trick or conventional cinema narrative. The story follows a path of cascading smaller climaxes until reaching the primary climax at the end. This structure keeps the audience engaged with the narrative and encourages suspension of disbelief.

In contrast Act Two intentionally does not follow these conventions as the aim is to represent reality, and reality is often mundane, lacking the climactic dynamics of fiction. Although there are several minor dramatic climaxes in the scene to sustain audience interest, they are not overt and are in keeping with the deceptive framing context of the act. Overall continuity is maintained through the characters' actions following a logical course.

While continuity is inherent in each act, it is also employed so that the transitions between acts are fluid and logical. The installation moves seamlessly from one dramatic point to the next, looping around itself so that it can be experienced at any given point in time by an audience member. Unlike a conventional cinematic or theatrical experience, the audience is not necessarily required to experience the work between finite start and end times. Act One begins with what could be considered the default environmental state of the installation. The narrator enters and the environmental elements progressively change in accordance to the narrative. For the work to flow, these changes have to be restored in a coherent and logical manner for the work to re-start from the beginning without jarring transitions that would disrupt the experience. [Methods used to achieve these transitions are discussed further in section 5.4, the Narrative Analysis section below].

5.3.4 Conviction

As illusion in the work relies heavily on narrative elements to create a compelling experience for the user, conviction is critical. On one level, the audience requires conviction to fundamentally engage with the narrative. If the narrative does not prove to be sufficiently engaging, the audience's interest will waver and the work will not achieve a high degree of presence.

For this reason, the first act is based on what could only be described as a clichéd murder mystery. The first act's overall dramatic structure and content are easy to comprehend, however, it is the spatial approach to narrative that creates a richly compelling scenario. Due to the nature of the exhibition environment, that is, non-fixed audience entry times and variable attendance durations, a simple and well-trodden story framework is appropriate as it falls within a familiar genre. The audience is therefore able to easily engage with the story at any given point of entry. Additionally, if the story is illogical or unconventional, the addition of the wide ranging mediation used to present the drama would more likely create a state of confusion, disrupting suspension of disbelief. As Nelms maintains, when the degree of conviction is high, and the audience is engaged in the

dramatic elements of the presentation, they are less likely to seek out the methods of deception [Nelms 1969]. Further, a high degree of presence also establishes the possibility for the audience to perceive the simulated characters as possibly existing in the space and presenting the drama as live theatre. Without the foundation of conviction, illusory deception would not be possible.

Whereas conviction is achieved predominately through narrative in the areas of cinema, theatre and literature, in this instance the story's unique presentation environment is also a contributing factor. Conviction is shaped through a wide range of other elements in the installation encompassing objects and artefacts, lighting, spatial sound and olfactory elements. For example, unlike installations presented in relatively sterile 'white cube' gallery spaces, *Häusliches Glück* takes place in an old apartment building at Pfarrplatz 18, Linz. The building itself has had over a century to develop its distinct scent. When entering the apartment, a heavy musty smell, mingling with stale tobacco greets the audience. The scent significantly contributes to the sense of immersion within the environment, even prior to the commencement of the electronically mediated elements.

Conviction in the second act serves a different purpose. The audience is not required to suspend disbelief in the drama, they need to be convinced that there was in fact *no drama*, and that the attendants were real and physically present. Conviction in this instance is based on the plausibility of the characters' correspondence to reality. Due to this, dramatic devices are not employed in the second scenario, for example, with lightning. The dramatic elements in Act One are even treated by the attendants as artificial, belonging to a fictional world, rather than the present reality that they inhabit. For example, the attendant pulling a power plug and stopping the music and rain further distances the characters from the previously artificial environment. In doing so, the attendants convey a similar perspective to the media that is also held by the audience, one of clear artifice. Their behaviour effectively reveals the trickery of the prior Act. The combination of these actions, and the context in which they are presented, aim to deceive the audience into believing that the virtual characters are not virtual and indeed are physically present.

5.3.5 Justification

Justification is used throughout the work as a concealing device to maintain a fluid narrative and resolve the illusory deception. Characters' actions are required to be justified as in the above case of consistency, but beyond the behaviour of the characters themselves,

elements of the physical environment are used to justify aspects of the narrative that would otherwise diminish the illusion. In this instance, principles of magic are applied in the work to conceal deficiencies in technology. As it is uncommon for many technologies that developers encounter to behave *precisely* in the required manner, the use of the conjuring principle of justification is an excellent device in maintaining illusion in media arts.

A multifaceted example of the use of justification is evident in the cupboard that partially blocks the door to the rear room, obscuring the audience's view and inhibiting entry to the room beyond. Firstly, this obstruction offers justification for the inaccessible room, a controlled space from where much of the illusory elements occur or are controlled from. Secondly, due to the nature of the mechanics used to move the cupboard, only a close approximation of the virtual characters actions (on screen) and the resulting movement of the cupboard is possible. Any major movement caused by a character would therefore be interpreted by the audience as unnatural, thus increasing suspicion. This mechanical issue is addressed via two different approaches, each of which is appropriate to the specific context of each Act.

The first act exploits light as a concealing device. When the killer enters the room with the narrator in the last scene, the mechanical cupboard is activated during the struggle in which the narrator is thrown into the object. It is deployed again after the narrator is murdered, when the killer attempts to gain access to the adjacent bedroom where the audience are situated by violently shaking the cupboard in an attempt to dislodge it. Preceding these two actions involving the cupboard, the killer walks through the apartment and systematically turns each light off, casting the audience – and eventually the narrator – into relative darkness. Simultaneously, the lightning simulation increases in a naturally rising progression coinciding with the increasing tension. By the end of the killer's walk, the only light visible in the apartment comes from flashes of lightning through the window shutters, a dim desk lamp in the bedroom with the audience, and a floor lamp obscured behind the cupboard in the narrator's room. This is a complex sequence of events and in the following section I will explain how each of these specific devices are used to justify the presence and absence of other elements, thereby maintaining consistency, continuity and conviction.

Returning to the struggle in the room, as the narrator grapples with the killer, the audience sees her on the television being swung into the floor lamp, which subsequently topples and smashes on the floor. Synchronized DMX lighting simultaneously disables this lamp, and in conjunction with the television image, sound of the breaking lamp from

within the room, and sudden darkness, creates a compelling illusion that the lamp has actually been smashed. This action justifies that the only remaining light in the room occurs only during lightning flashes. When the cupboard is violently shaken, the movement of the cupboard can be physically seen and heard, but the image of the killer's actions behind the cupboard are only seen as flickering fragments on the television due to the intermittent lightning activity. The audience therefore does not perceive discrepancies in synchronization. The fragmented visual information additionally adds to the drama as it increases uncertainty of what is occurring. The systematic lighting design of this final scene is therefore employed as a concealing device. The characteristics of the lighting are justified and do not arouse suspicion as they are appear consistent with the progression of the narrative.

5.3.6 Surprise

As noted in Chapter Two, surprise in magic occurs when the framing context is disrupted and an alternate reality is revealed. The element of surprise in *Häusliches Glück* is directly shaped by the installation's narrative structure, when the framing contexts shift between the two Acts. Surprise also operates indirectly at any given point of the work when the audience's perception of the virtual characters shifts either way between reality and virtuality. This second aspect is the same surprise evident in *The Black Box Sessions*. *Häusliches Glück* however additionally adds an intentional shift in the framing context as part of the fabric of the work.

In addition to surprise generated though the disruption of framing contexts, surprise also occurs as a dramatic device, primarily evident in the first act. This example to some degree is also linked to a perceived shift in framing. For instance, the audience has certain expectations that they are going to experience a pre-recorded video work when they enter the apartment and first see the narrator on the television screen. They are subsequently surprised when the narrative elements such as the storm or the music spatially occur around them. Each new element builds on this surprise, as the situation the audience is presented with is unexpected and no longer conforms to media experiences they are familiar with. Although familiarity with the genre may lead them towards the overall outcome of the narrative, they are unable to predict how this will transpire within the mediated environment. An example of this is evident in the actions of the killer in the last scene. I observed audience members shocked when the cupboard violently moves as the

narrator is thrown into it during the final struggle. I also saw audience members leap across the room in shock when the killer begins to furiously shake the cupboard to gain access to the bedroom where audience members are located. This event is wholly unexpected. Even though the audience may frame the incident as fiction presented by mediated characters, the element of surprise still works just as it does in a cinematic thriller, perhaps even more effectively than in a cinema space, due to the high degree of presence the installation environment is capable of producing.

5.3.7 Disguise

Disguise encompasses any number of techniques employed to conceal the method in order to create an effect. As illustrated above, disguise is closely linked to the psychology of justification in magic. Justification is employed in order to disguise devices via dramatic elements. Disguise is also necessary in the installation in order to conceal the wide array of technical elements (the mechanics) required to create the augmented environment. By concealing these elements, the audience experience is not clouded by elements that may indicate pretext, thereby ensuring that they instead focus on the significant factors contributing to the illusion. Conjuring, with its particular context and set of requirements, generally employs a far wider range of disguise including psychological expedients such as attention control, in which the magician may cunningly induce the spectator to focus their gaze on a specific subject to conceal a concurrent manoeuvre. In the case of the installation, physical disguise is appropriate and is the primary method used in concealing the mechanics of the illusion. Again these methods are closely linked to justification, as any method of disguise that is seen to be incongruous increases suspicion to the detriment of the illusion.

The audience experiences the work throughout the whole apartment, therefore the apartment as a whole and its containing elements could be interpreted as analogous to a device used by magician to execute a trick, the mechanics for illusion. Concealing devices encourage the suspension of disbelief by eliminating these mechanics from the audience's perception with the goal of a transparent medium. The apparent transparency of the mechanics enables the additional deceptive trickery that occurs, and supports suspension of disbelief in the narrative. In all instances, disguise is employed to reduce suspicion by developing a natural and familiar environment in keeping with the framing context of the work.

Examples of how the mechanics of illusion are disguised and how these mechanics are also employed as a concealing device for other elements of the installation have been discussed in section 5.2 and are additionally elaborated upon in the following section 5.4.

5.4   Narrative Analysis

This section examines the two key narrative scripts presented in *Häusliches Glück* to provide background into the design of audience experience, timing and spatial media elements of the work, and to demonstrate how these are combined to advance the overall illusion. In contrast to the preceding general discussion, this section focuses on principles of deception that are applied to precise moments within the narratives. As discussed previously, much of the success of a magic trick is due to destabilising an audience's expectations. *Häusliches Glück* uses both mechanical devices and dramatic elements to continuously undermine audience expectations during the work. Although their expectation is primarily that they are experiencing a fictional narrative in the form of pre-composed film, the illusory devices consistently indicate otherwise, that the work is being played out by actors who are physically present or, indeed, gallery attendants who co-habit the space.

Analyses of the following scripts are provided in italics, capitals define characters, dialogue is indented and action is indicated by parenthesis.[38]

5.4.1 Act One

Audience members enter the building and ascend stone stairs to the first floor. They notice a dimly lit apartment with the door slightly ajar. Upon entering the old apartment, they are greeted by the musty odour of stale tobacco, old books and furnishings. Although the apartment appears to be vacant, it eerily shows signs of being recently inhabited. The bed is unmade, cigarettes overflow from ashtrays, food is half prepared, and cloths are strewn on the floor.

A computer vision system determines the presence of the spectator and activates the narrator sequence. The narrator enters the rear room through a door and sits down in a chair.

[The narrator addresses the audience directly….]

NARRATOR   Hello, come closer, I'd like to tell you a little story… About an ordinary apartment, with an extraordinary history…

This is timed so that the audience enters the bedroom from the entrance/kitchen approximately the same time as the narrator walks across the room and sits down. The audience can see the narrator on the television screen via what appears to be CCTV, and hear her voice coming from within the next room. This split between sound and image is designed to accentuate the fact that although the interior of the blocked room is visible via a camera, the sound is direct from the narrator, not presented via the television. By presenting the sound that corresponds to the visual elements on the screen emanating from the location of the perceived source, the audience is likely to acknowledge that the mediated content is in fact occurring live from the next room rather than pre recorded content. Rather than talking towards the camera, she arches her head towards the bedroom as if addressing the audience directly.

NARRATOR   The year is 1957; Bob Martin, Austria's first Eurovision contestant, had just finished in last place with *'Wohin Kleines Pony'*. This was not the only tragedy to befall Austria on that fateful day…

The radio located near the front entrance crackles to life and the song 'Wohin Kleines Pony' can be heard. This song continues in its entirety as background music whilst the story unfolds. After the song is complete, the software randomly selects other songs that were also performed during 1957 Eurovision Song Contest. The radio is employed as a device for diegetic sound to create atmosphere for the narrative. The random function of the music provides variation within the work for repeat audience visits thus destabilises expectations.

NARRATOR   That night, our friend Wilhelm had just made it home as the storm broke, but not before he was caught in the deluge. He entered the apartment, peeled off his wet coat and momentarily slumped on the chair.

As the narrator describes the deluge, a flash of lightning can be seen though the shutters on the apartment windows and the sound of rolling thunder and rain fade up through the speakers concealed behind each of the three windows in the apartment. The speakers are oriented so that the environmental sounds are perceived as coming directly from their source. The environmental effects suddenly shift the audience from the position of a passive observer to right in the centre of the fictional world.

The sound of Wilhelm entering can be heard in the kitchen via a speaker concealed within the cupboard. As the audience is currently located in the bedroom watching the narrator on the television, they can only hear this sound coming from behind them in the kitchen, as there are no direct sight lines to the source. The image on the television flickers and cuts from the live narrator camera to the bathroom camera. The audience sees Wilhelm enter the bathroom and hang up his umbrella, soaked and dripping from the rain. Wilhelm is seen onscreen drenched with water to reinforce the physical presence of the storm that the audience is experiencing live within the installation, thus narrowing the schism between the real and virtual.

When the video cuts between the narrator camera and bathroom camera it is prior to the entrance of Wilhelm. The audience therefore sees the bathroom empty for several seconds. This separates the work from film editing conventions that would naturally place the edit on his entrance. Although this is not perceived as a significant fact, due to the audience's familiarity with the smooth flowing edits inherent in cinematic drama, the cut subconsciously gives the impression that they are viewing a somewhat randomly switching CCTV system, not a refined cinematic sequence. All edits within the work are aimed at being slightly off, whilst at the same time finding a balance of not disrupting the narrative and therefore reducing suspension of disbelief.

[Wilhelm exits the bathroom and shortly after the camera cuts back to the narrator.]

NARRATOR   It had been a long day at the Voerst[39] and he was tired and a little drunk. Prying his body from the chair he walked a little unsteadily into the bathroom to prepare a bath.

The actions of Wilhelm can be heard shifting from the kitchen back to the bathroom via the respective speakers.

WILHEM   [Turns on tap] [A thunderclap is heard and the apartment lights flicker.] Mutters to himself cursing the weather

The audience see Wilhelm turn on the tap in the bathroom via the television, however also hear the sound emanating from the bathroom. When the apartment lights flicker the CCTV image on the television screen similarly flickers, dropping to black as the lights dip. This is the first instance when a physical occurrence experienced by the audience (the apartment lights) is mirrored in the virtual content (the video) thereby perceptively linking the two as occurring live.

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[39] The Voerst Alpina is a major steelworks operating in Linz and was chosen to make the characters' traits plausible and context specific.

NARRATOR   He went over to search for candles just in case the power failed as it often did during these storms. The wiring in the building was old you see, just like most of the inhabitants.

A large burst of thunder can be heard and the lights in the apartment flicker. Wilhelm can be seen exiting the bathroom off camera and is then heard again rummaging through drawers in the kitchen.

NARRATOR   Locating a candle, he returned to the bathroom.

[Wilhelm returns to bathroom and prepares for shaving with straight razor]

During this process Wilhelm begins whistling along with the music playing on the radio ('Wohin Klines Pony'). This again provides a correlation between the actions of the virtual character to the music emanating from an object physically present for the purpose of encouraging the audience to infer that both aspects are occurring in the physical environment. Simultaneous to Wilhelm's audio activity, the audience sees the narrator on the television getting out of her seat and rummaging through the room looking for candles. After opening some drawers in the room, she walks over to the cupboard that is blocking the door and opens it. As she does so, the cupboard moves ever so slightly as the motor control is activated. The audience see this action on the television, hears her movement within the room, and sees the cupboard physically shudder. The narrator's action opening the cupboard is so incidental and matter-of-fact that no weight is placed on this occurrence. The dramatic impact however is significant. This is the first instance where the actions of a virtual character physically influence the environment (unlike the apartment lights previously in which a physical event impacted upon the media. i.e. virtual to real as opposed to real to virtual.) Though subtle, there is a shift in the perceived framing context at this moment. The audience, initially comfortable with the fictional narrative played out as cinema, potentially questions their interpretation of the events. It is in fact the subtlety of this action that makes it effective. The result is unsettling as the audience, whilst watching the television in front of them, notice the movement in the left periphery of their vision. If this movement is perceived, the device shifts the framing context from an immersive cinematic work to a live theatrical production.

NARRATOR   The neighbours were arguing about something trivial yet again, they always argued, it was not the fact that they argued that irked him, but the trivial nature of their conflicts. The whole building was like a giant buzzing hive and there rarely seemed to be any peace. [Sound of neighbours arguing /breaking glass]

WILHELM   [Yelling from bathroom] Shut up, it's late for Christ's sake.

[Neighbours fall quiet for a moment, then respond with an antagonistic remark.]

The speaker concealed in the window cavity plays the distant sound of an argument. The sound is equalised and the volume adjusted so that it appears to come from an apartment across the atrium outside. The argument is between a man and woman. The dialog and sound effects for the argument and their subsequent response to Wilhelm's statement are randomised in software. Each argument presented is therefore unique in the instance of repeat audience visits. This scene is an example of the benefit of spatial story telling and is particularly effective. The narrator recounts the tale from her room, Wilhelm can simultaneously be heard yelling from the bathroom on the other side of the apartment whilst the sound of the arguing couple is perceived in the distance, beyond the confines of the apartment.

WILHELM   [Mutters to himself about neighbours]

NARRATOR   Looking in the mirror, he noticed some mustard left over from the würst he consumed on the way home, wiping it off [Wilhelm wipes off mustard with finger and then eats it] he began to prepare for a shave; never a good idea after the consumption of alcohol, but this was the kind of idiocy that Wilhelm was accustomed to, and he was managing rather well under the circumstances. 'Could mustard actually be used for shaving cream?' he wondered as he worked the lather onto his face. He was so consumed by the shaving process, and the lingering taste of Estragon, that he did not notice the figure enter though the door [Killer enters through the door from the storm and is wearing a soaking raincoat]. Standing in the doorway water pooled at his feet from the storm, his clothes soaked.

               [Narrator pauses after describing the murderer]

NARRATOR   I'm sorry... one moment, [clears throat, gets up from the chair and gets a glass of water resting on top of the chest of drawers. Sips water, sits back down and continues...] [Sound of footsteps]. Yes, Wilhelm never noticed him enter...

The pause is added for dramatic tension. It disrupts the flow of the fictional narrative whilst maintaining the progression of the 'live' narrative. When the narrator ceases to recount the story, she directly addresses the audience by apologising. By engaging with the audience, the narrator places herself in the present, unlike the other characters displaced in time, bringing both parties together and encouraging presence via social interaction. Wilhelm is seen on the television oblivious to the presence of the killer that the audience can hear walking across the entrance room towards the bathroom.

[Moments later the killer enters bathroom, Wilhelm turns from mirror still with shaving cream on face.]

WILHELM   What?'

[The two struggle. The killer wraps a rope around Wilhelm's neck and as they continue to grapple, orient themselves facing away from the camera. The killer can be seen grabbing Wilhelm's hand holding the razor. As they both spin back around towards the camera Wilhelm's throat is cut. He screams and falls limply to the floor]

The killer and Wilhem are heard engaged in a violent struggle in the bathroom until a scream is heard and the audience hears a body drop.[40]

NARRATOR   As you can see, the situation for our friend Wilhelm was not good, not good at all. The blade had expertly sliced through his carotid artery. Blood began to pool around his motionless body, as it lay twisted on the floor, his life rapidly draining away.

The narrator again addresses the audience with this statement (as she does with the inviting statement at the beginning of the story and the prior apology).

[Thumping on roof coming from above the bathroom. Muffled sounds, 'keep it quiet down there']

A speaker concealed near the ceiling in the bathroom playes equalised audio to give the impression that the thumping and dialogue are coming from apartment above. The killer is seen via the television looking up, responding to the source of the sound. The actions of the character on screen are directly linked to the sound physically emanating from a different room. This links the behaviour of what may be perceived as a virtual character (mediated via the television) to events that occur in real physical space.

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40 The scream used is the 'Wilhelm scream' no less! A stock sound effect (named after a character) that was first used in the 1951 film *Distant Drums* [Walsh 1951] and to date has been used in several hundred film, television and game works. For an evolving list of titles refer to [IMDB 2011].

NARRATOR   The rain continued to sheet down outside…the storm's ferocity

seemingly mirroring the violence of the attack as if they were intertwined

in some form of twisted symbiosis…

The simulated storm outside increases in intensity, lightning and thunder are more frequent as is the resulting erratic power in the building, often submerging the audience in darkness as the lights flicker and at times, drop out entirely for short moments during the simulated brownouts.

[Narrator pauses for a few seconds]

[Sound of neighbours arguing again in distance]

During the pause in narration, another randomised argument can be heard in the distance, this time somewhat masked and abstracted by the increased sound of the storm.

NARRATOR First he turns the bathroom light off.

[Narrator pauses for a few seconds]

[Light off]

[Footsteps]

 NARRATOR   Then the kitchen.

[Narrator pauses for a few seconds]

[Light off]

NARRATOR   She hears him crossing the room.

[Sound of shuffling footsteps.]

[Narrator pauses for a few seconds]

NARRATOR   Then the lounge room.

[Light off]

As the killer moves through the apartment, his footsteps shift from the bathroom, to the entrance, and then to the bedroom. Each time the narrator describes the killer turn off a light, the audience simultaneously hears a switch flick from that particular room and the ceiling light is turned off via DMX casting the area

into darkness. The combination of the sound of the killer's movement and the physical enactment of turning the lights off provide a comprehensive sense of the virtual presence.[41]

At this point the audience is situated in a predominantly dark apartment; the only light source is a dim desk lamp in the bedroom and diffused light coming from a floor lamp in the narrator's room. Momentary bursts of lightning brightly illuminate the apartment.

[Suddenly the footsteps cease. The only sounds that can be heard are the radio and the never-ending rain. After a pause there is a sudden shuffle towards the front door]

NARRATOR   She sat waiting and waiting ... and waiting, silent … in the dark, frozen in terror, unable to move.

[Narrator fidgets with paper and mutters something to herself]

The narrator at this moment realizes the outcome of the story and becomes somewhat unsettled. After recounting the tale of a murder that occurred in the 1950's, she suddenly realises that the script that she is reading now refers to herself as the protagonist. The events are no longer displaced in time but have transitioned into the present. This shift occurs, beginning with the statement, 'She sat waiting and waiting…' Her statement effectively reflects precisely what the audience is doing at that moment in time also, waiting in a dark apartment, uncertain of what will occur. It reaffirms that the narrator coexists with the audience in the present, which to some extent are now both 'in the story together' and indicates that any further events that transpire in the narrative are now occurring 'live'.

NARRATOR   She never heard him enter because of the commotion of the storm.

[Loud thunderclap and lightning. The fake door opens and the killer emerges][42] [Shadow of killer on wall from lamp flash during lightning] [43]

NARRATOR: The killer slowly approaches from behind, his shadow dancing around the walls in the flickering light, she feels his presence as he draws closer, [Shudders] his hands reaching towards her trembling body. He grasps

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[41] In addition to the lights being controlled, the initial plan was for the killer to walk through a bead curtain that would subtly rustle via a concealed mechanical device, indicating his physical transition through the doorway between the entrance room and bedroom. This was not implemented for the final exhibition as the curtain detracted from the overall atmosphere established in the apartment.

[42] As there was no actual door in the narrator's room beyond the one blocked with the cupboard, this had to be simulated so that the virtual characters could logically enter and exit without having to pass the audience. A door leading to nowhere was mounted on the wall in the corner of the room.

[43] While this was in the script, it was never fully implemented in the final work. The aim was that the audience would see a shadow shift across the wall of the narrator's room (via the gap in the doorway) that corresponded to the depiction of the killer entering the room on the television.

around her neck, she gasps, rising in an attempt to pry his crushing grip from her neck. They struggle, he throws her towards the wall, the lamp smashes and they are thrown into inky darkness,

As the killer approaches, the narrator can be seen describing her imminent demise. Although the scene is charged with tension due to the developing drama and the environmental mechanics, it is simultaneously whimsical and absurd as a counterpoint to the violence. I.e. she is narrating her own death as it is occurring live, still desperately clutching the manuscript in an attempt to continue reading. The struggle is visible on the television and a cacophony can be heard from inside the room. When the narrator crashes through the floor lamp and it topples, a sound effect is played to simulate a breaking globe, and the DMX lighting control disables the lamp. The effect from outside the room is that the audience hears a crash, the final light source emanating from the room vanishes, and the simulated CCTV camera feed to the television drops to black giving the impression that there is not enough light available to capture an image. The only time the audience can see activity occurring in the room via the television is when a series of lightning flashes occur. This is used as a concealing device for the following actions.

NARRATOR: She sees his leering face in the flickering light from the window
              [Lightning Flash], She tries to scream, but can't, her body recoiling in
              horror. Her mind feels hazy. The enveloping darkness is interspersed by
              flashes of bright light [Lightning]. She feels her life slipping away but
              desperately struggles [Crash into cupboard]. She never even felt the razor
              effortlessly sli…

In this sequence the two characters continue to struggle and the narrator is hurled into the cupboard. During the collision the cupboard violently rattles to simulate the impact of her body. As discussed in the section 5.3.5 on Justification, the sparse visual information created by the lightning flashes was used to conceal the synchronised movement of the cupboard to the corresponding television image. Unlike the previous movement of the cupboard when the narrator opens the door looking for candles, this mechanical movement is substantial and impossible to miss, the entire cupboard crashes into the doorframe. The story abruptly ends when the narrator's throat is cut by the razor mid sentence. This concluded the tale and the presence of the narrator in the experience. Her death is only witnessed in fleeting video fragments on the television during lightning flashes. The result is her lifeless body sprawled on the floor. The remaining inhabitants of the apartment are now the killer and the audience. Due to the prevailing darkness in the space and substantial lack of video information on the television (the screen is predominantly black at this point, momentary

images flash up only during sporadic lightning activity) the audience becomes more reliant on sound or physical cues within the room to determine the location of the killer.

[Lighting and rain continues and we see the killer at the cupboard during a lighting flash and it shakes]

A sudden flurry of lightning reveals on the television that the killer is behind the cupboard. He is heard straining to move the cupboard in an attempt to gain access to the room in which the audience is located and the cupboard heaves back and forth. Simulated sounds of the strenuous activity undertaken by the killer combine with the actual creaks and groans of the cupboard physically shaking. The moment can simultaneously be viewed on the television to the right of the audience, the commotion behind the cupboard seemingly revealed via the camera during lightning flashes.

[The killer exits, the apartment is still, the sound of rain continues to sheet down outside the windows and the narrator's body can be seen in a contorted position on the floor during occasional lightning flashes, punctuated by thunder.]

Whilst the killer attempts to get unsettling close to the audience, he fails and can be seen departing through the rear door during the lightning flashes. The time that elapses until the commencement of the second Act (approximately 90 seconds) leaves the audience waiting in relative darkness in the apartment with a degree of uncertainty as to whether the murderer may appear again or if indeed it is the end of the work as a whole. Act Two demonstrates this is not the case, however the events are most certainly not what they expect.

5.4.2 Act Two

As the narrative in Act One is set in 1957, the audience is clearly aware that the characters occupying the environment are not ghostly apparitions from the past, and indeed that the overtly dramatic scenario presented to them has no connection to their current reality. The narrative aspect of the work is undoubtedly interpreted as an intricate fictional simulation. There is, however, the possibility of a sense that the characters in this story may have been be played by actors that co-habit the space. For example, the narrator might be considered an actor playing the role of a narrator within an environment that has clearly fictitious elements such as a radio operating of its own accord.

As a counterpoint to this fictional scenario, a second narrative sequence was developed that fluidly occurs after the first. The aim of this Act is to firmly root the virtual characters in the present (in a similar manner to *The Black Box Sessions*). Not only do these

subsequent characters exist in the present, they are portrayed as plausible in the reframed context of the act. The audience therefore initially experiences a wholly fictional narrative based partly upon suspension of disbelief, and is then presented by a factual situation founded solely on deception. Additionally this sequence is a means to achieve a smooth and elegant transition for re-setting the environment to the default state, ready for the commencement of the first Act.

Two actors under direction from myself and Andreas Mayrhofer improvised the following sequence, therefore, no script is available. Discussion of this sequence is via descriptive analysis of the video content presented in the work.

When the first Act ends, all the lights in the apartment remain out due to the storm. The audience waits in near darkness – other than a diffused glow of the bedside lamp and the occasional flickering of lightning through the shutters. All that can be heard is the constant patter of rain and the radio still playing in the kitchen. The television is black after the lamp was smashed during the struggle (giving the impression that the 'live' CCTV camera is unable to capture an image in the darkness). The apartment is eerily still after the dramatic climax of the previous narrative.

In the darkness, sounds of movement are heard from the narrator's room: could this be the actors leaving?

After thirty seconds the audience hears the sound of a door opening emanating from within the narrator's room. A crash is heard – followed by cursing – as an individual bumps into an object in the darkness. The sounds of a lighter flicking are also heard. A small wavering pinpoint of light is visible in the blackness of the television image and faint flickering light is seen emanating from behind the cupboard in the room. The lighter goes out, the room is cast into darkness again. Then it reappears. The audience continues to hear shuffling and then the actor calls out to her colleague to come and assist with a flashlight. Moments later another individual is heard entering the room and a flashlight is seen sweeping around on the television screen and from within the physical space of the room, darting across the walls. After a brief moment of activity, the second character locates a switch. The whole apartment is cast into light as power is apparently restored to its natural state. Simultaneously, the television flickers and an image appears of two women standing in the room, both dressed in Linz09 Culture Capital t-shirts. The women begin to dismantle the installation, seemingly under instruction from the management, moving artefacts and props whilst generally engaged in small talk. During the course of this activity, the attendants show signs of awareness of the audience's presence in the adjacent room, however they continue about their business.

The attendants continue to talk amongst themselves whilst working when a mobile phone rings and is answered by Attendant 1. The audience hears half the phone conversation (the attendant's perspective) of what appears to be a misunderstanding about the exhibition de-install (. As this discussion proceeds, the character states that her phone is running out of batteries, and indeed, moments later it cuts out. Whilst this conversation is occurring, the other attendant continues to work and can be seen on the television unplugging a power cable that runs along the ground behind the cupboard. The very instant the cable is unplugged the television flickers to black and the sound of the radio and rain cease. The only sound that can be heard in the apartment now is directly related to the perceived actions of the characters in the rear room, no longer the broader simulated environment. The act of unplugging the cable ends the remaining legacy media elements from the previous Act. It is the final transition in framing context from a split fictional environment, dislocated in time, to one centered, in fact, purely in the present.

The attendants discuss their predicament when suddenly the phone located in the bedroom near the audience begins to ring. The audience hears one of the attendants approach the cupboard and attempt to move it in order to access the phone, making the cupboard rattle. She calls out to the audience to assist her and answer the phone as she is unable to gain access, despite heavy shaking to dislodge the cupboard. If the audience answers the phone, they are presented with a fast talking anxious manager insisting that the attendants must call him back immediately. He promptly hangs up before the audience has the chance to engage in conversation – as the line goes dead after the flurry of spoken directions. The swiftness of this exchange and the context it is presented in removes any need for an intelligent response from the software to audience input. It is a decisive end to the interactive element, designed to sustain the illusion. The previously mentioned narrative element of the second attendant disconnecting the power (and therefore the television) additionally played the role of a concealing device in the work. As the television still appears to be disconnected during the phone sequence, the audience is unable to perceive any synchronization issues when the attendant shakes the cupboard as they can't simultaneously see the action occur on the television (working in a similar manner to the use of lightning as a device to conceal discrepancies in Act One however appropriate to the new framing context).

Realising an error has occurred, the two attendants proceed to roughly move all the props in the room to their original location, restore power to the television (and therefore CCTV image), and hastily depart. Moments later the first attendant re-enters and turns the light off again in the narrator's room (as it had been when they arrived). This was executed to justify the following audio transition that was required to occur in darkness whilst at the same time appearing plausible. I.e. the attendant wished to return the room to the way they found it as closely as possible due to the misunderstanding.

This completes the second Act. Following this Act is a further thirty-second transition through the use of sound in which it appears that people are moving objects around in the darkness of the narrator's room. This was employed for continuity, so that when the first Act commences again, if audience members are still present from the previous Act, the contents of the room do not appear to jump between the two scenarios. Darkness was used as a means of disguise so that the audience could not see what was actually occurring within the room (nothing) and were therefore reliant on sound cues and their imagination to construct these events. Through this process the installation is returned to its ready state for the commencement of Act One.

5.5   Reflection

This section presents a comparative analysis of *Häusliches Glück* and *The Black Box Sessions*, exploring the strengths and weakness of the two approaches in terms of simulated virtual presence.

The fundamental aim of both *Häusliches Glück* and *The Black Box Sessions* is to create a sense of virtual characters co-inhabiting the physical environment with the audience. Although these objectives are consistent, the framing context of *Häusliches Glück* is significantly different and, therefore, the nature of the illusion is somewhat more ambiguous and slippery. The audience is continually placed in a state shifting between virtuality and reality. The perceptually real elements are combined within a fictional narrative therefore the audience is never quite certain what is fantasy and what is fact.

The Black Box Sessions conversely has a single focused framing context founded on reality, and, although this possibly aids its ability to deceive the audience, it perhaps does not afford the same entertainment value as *Häusliches Glück*. To some degree, audiences seem to delight in the confusion of these shifting frames and the uncertainty that they present.

Due to the driving narrative content in *Häusliches Glück*, the work employs two forms of illusion in equal measure: suspension of disbelief and deception, constantly shifting between the two. This investigation therefore utilises the principles of magic in different measures to *The Black Box Sessions*. For example more weight is placed upon conviction. Act One of *Häusliches Glück,* in particular, balances immersion in the story through suspension of disbelief with deception though the uncertainty as to whether the tale is being recounted by individuals physically present. If conviction is lacking and the audience

is subsequently not immersed in the drama, then the additional layer of deception would certainly fail; both forms of illusion would break down.

Unlike the *The Black Box Sessions* performance space, which focuses the user's attention to a fixed point of mediation (the peephole), *Häusliches Glück* approaches electronic mediation spatially through the entire installation area. The third iteration of *The Black Box Sessions* closes this gap with the addition of the foyer. This version at UTS Gallery was developed subsequent to *Häusliches Glück* (approximately two years later) [44] and there is no doubt that it was informed by the outcomes of this work, particularly the approaches to illusion in the foyer that expanded the mixed reality environment and the use of physical artefacts as a means of contributing to the narrative. Even though the third iteration of *The Black Box Sessions* presented a more multifaceted immersive space, it was by no means as all pervading as *Häusliches Glück*, which comprehensively surrounds the user with media.

Häusliches Glück was developed to complement the techniques of illusion utilized in *The Black Box Sessions*, not necessarily to re-present the same notions in a different context. Its production and presentation enables the examination of a novel set of concerns that I felt needed to be addressed after the initial public outcomes of *The Black Box Sessions*, that of a foundational narrative and the physical manifestation of virtual characters' actions.

5.6 Conclusion

Häusliches Glück demonstrates the use of conjuring principles as a means of developing the illusion of perceptively real characters in mixed realities. This in turn propels the narrative. The work achieves this through the tight integration of a wide range of media to create an immersive polysensory environment. *Häusliches Glück* demonstrates how narratives in mixed reality can enhance conviction in the very same manner as magicians employ showmanship, both with the common goal of advancing an illusion. It further demonstrates how multi modal experiences increase presence and cumulatively aid in deception.

The installation illustrates the principle that multiple framing contexts can be integrated into a single cohesive work, thereby dynamically shifting the nature of the illusion and audience experience. On one level of the illusion, the audience is encouraged

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[44] The developmental timeline of the two works are as follows: *The Black Box Sessions* V1 (2008), *The Black Box Sessions* V2 (2009), *Häusliches Glück (2009), The Black Box Sessions* V3 (2011).

to suspend disbelief through the cinematic fictional narrative they find themselves immersed in. On another level, the environmental elements indicate that humans physically present in the space are playing out the very same story. The audience is finally presented with the last layer of deception occurring in Act Two whereby they are transported again to the present, and encounter a relatively familiar everyday situation.

All these permutations of illusion are achieved through the same methods used to execute conjuring tricks: the unified integration of mechanics and showmanship. Unlike magic, however, where the audience is expecting to be deceived, mixed realities have the potential to occur within a wider range of framing contexts. The audience in these circumstances may not expect deception to transpire. Even when a particular aspect of the deception fails (as it often does in these circumstances), each new illusory element adds to the uncertainty and makes the audience continually question what is in fact real or virtual within their surroundings. It is perhaps this uncertainty above all that creates tension and drives audience interest and ongoing engagement with the work.

Chapter 6: Conclusion

The quest for enhancing realism in the arts is an ancient one: prehistoric paintings of Altamira bison were positioned strategically over bulges of the rock to highlight the curves of the beasts [Macknik & Martinez-Conde 2008: 20]; the painters of the 18th century were encouraged to create panoramas 'so true to life that they could be confused with reality' [Comment 1999: 7]; and, from the 20th century onwards, cinema has presented narratives that 'feel' real to audiences all over the world. In more recent history, the development of a range of new technologies has made possible more complex multisensory illusions in the domain of virtual and mixed realities. The artworks I have presented in conjunction with this thesis aim to enhance, or 'augment' reality by combining principles of deception from magic with novel applications of new technologies.

This thesis has broadly questioned how the development of illusion can be oriented to deliberately deceive audiences in playful and entertaining mixed reality artworks. Through the development of two mixed reality artworks, *Häusliches Glück* and *The Black Box Sessions*, I have specifically examined how deception can be put into service to create seemingly real computer agents that act and react in real environments. In the process it has detailed how the form and content characteristics of a particular medium can contribute to the sense of authenticity that audience members experience, even in instances when that experience is clearly framed as a fiction.

As a means of approaching the practice-based research, this thesis draws upon techniques used by the true masters of deception: magicians. While the magician's methods have changed over time, the psychological principles of misdirection have remained relatively unchanged since the first audiences were deceived many thousands of years ago. These principles have guided the construction and analysis of a range of illusions in the mixed reality artworks.

I have always considered elegantly resolved works are the result of attention to detail, and there is no better application of this concept than in attempting to deceive an audience. The prospect of transcending suspension of disbelief to a state in which the audience believes every single constituent of a mediated experience is a factual representation of reality poses a uniquely complex challenge to obsess over. The benefit of this approach in

terms of evaluating the effectiveness is that success and failure are particularly decisive; there is no middle ground. An illusion either achieves the aim or fails. The old adage 'the devil is in the detail' is particularly apt in this context.

The instances of successful deception during the public presentations of these artworks indicate that, through this approach to illusion, the mixed reality content was effective in achieving a high degree of perceptual and social realism. This is evidenced by the fact that deception requires unquestioning belief, not merely the suspension of disbelief. When an audience member truly considers the virtual elements to be real, the behaviour and media characteristics of the virtual characters (and surrounding environment) have withstood scrutiny and exceeded the threshold of believability. Virtual characters with limited intelligence appear to be more clever than they actually are by responding appropriately to a range of situations (social realism); and key media characteristics are designed to exploit the inherent deficiencies of the particular medium to enhance realism, not reduce it (perceptual realism).

These outcomes are achieved by utilising the same overall structural approach inherent in a magic trick in which two concurrent processes are at play. On one hand, the content provides a dramatic context within which engagement and conviction are encouraged. This is the aspect of the work of which the audience is most consciously aware. On the other hand, the psychological misdirection and mechanics of the illusions are subtly employed, outside of the audience's immediate consciousness. Despite this, misdirection remains pivotal in shaping the experience of an audience member in a fictionalised setting. The resulting works, therefore, conform to the overall structure of a conjuring illusion in which two narrative strands occur: that which the audience perceives and the undetectable narrative that the magician simultaneously pursues to execute the resulting illusion. This reinforces the fundamental concept that underpins all conjuring illusions: it is not what the magician (or in this instance media developer) does, but what the audience actually thinks has occurred, that is of critical importance.

This is the essence of the deception in both *Häusliches Glück* and *The Black Box Sessions*. The works are constructed as complex magic illusions in which the audience's experience of reality is activated by the design and structure of the installations. Even if the deception unravels at some level (an audience member uses a mobile phone to 'peek' into the darkness of the *The Black Box Sessions* or the mechanics are revealed in *Häusliches Glück*), the artworks remain engaging because other illusions are simultaneously taking place, of which

the audience may not be consciously aware. In this way, both works rely on the uncertain and shifting interpretation of simulated objects and events as a central device that drives the overall audience experience. The approach to illusion outlined in this thesis is therefore an effective means of establishing robust and compelling illusory experiences across a range of media arts practice.

It is hoped that the practical and theoretical underpinnings outlined in this thesis provide a novel and valuable perspective on developing realistic electronically-mediated experiences. Due to the remarkably expansive and versatile potential of conjuring theory, I also hope that this research acts as a springboard for future scholarly and artistic endeavours integrating magic and media arts.

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9. Appendices

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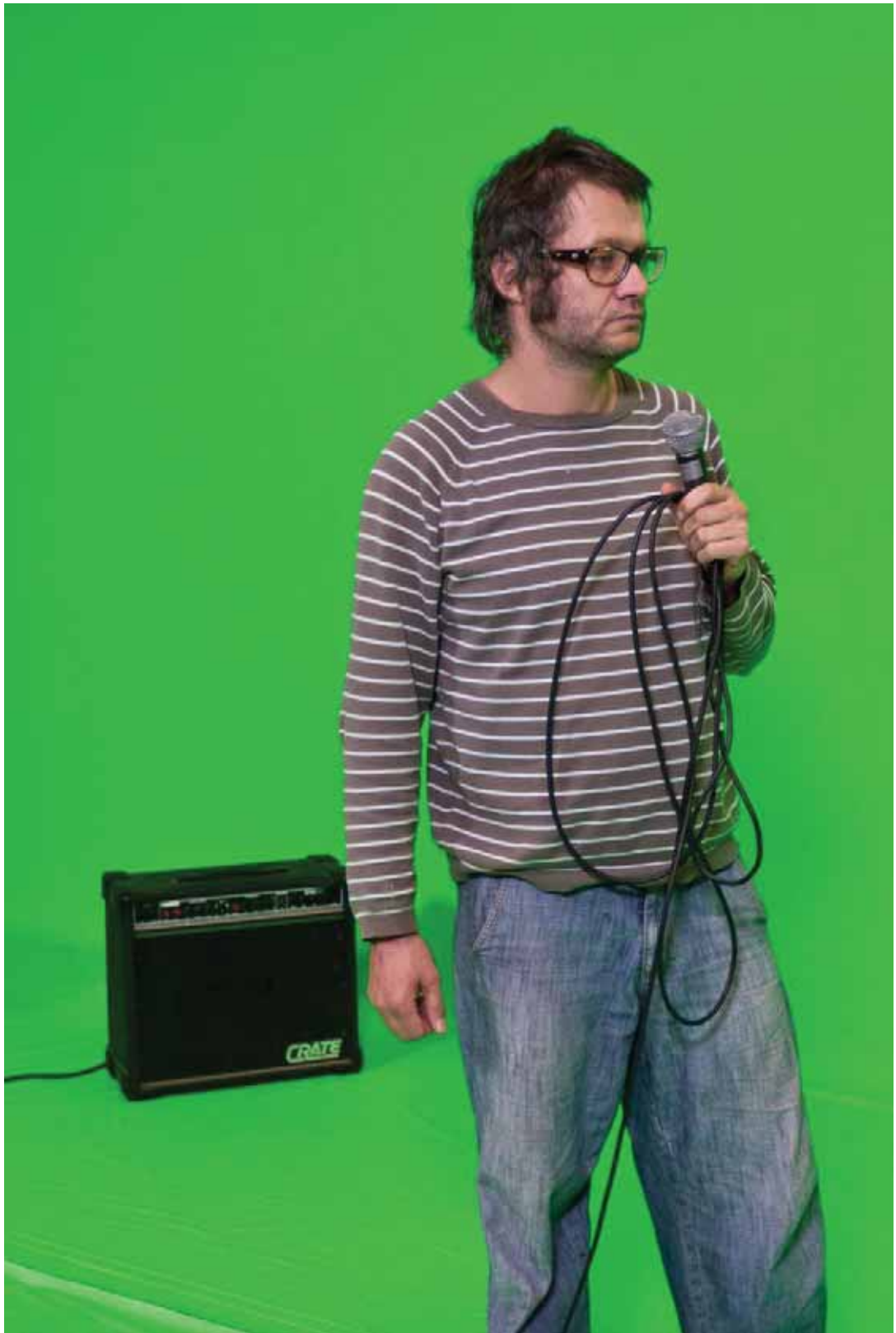
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II. The Black Box Sessions Installation Stills

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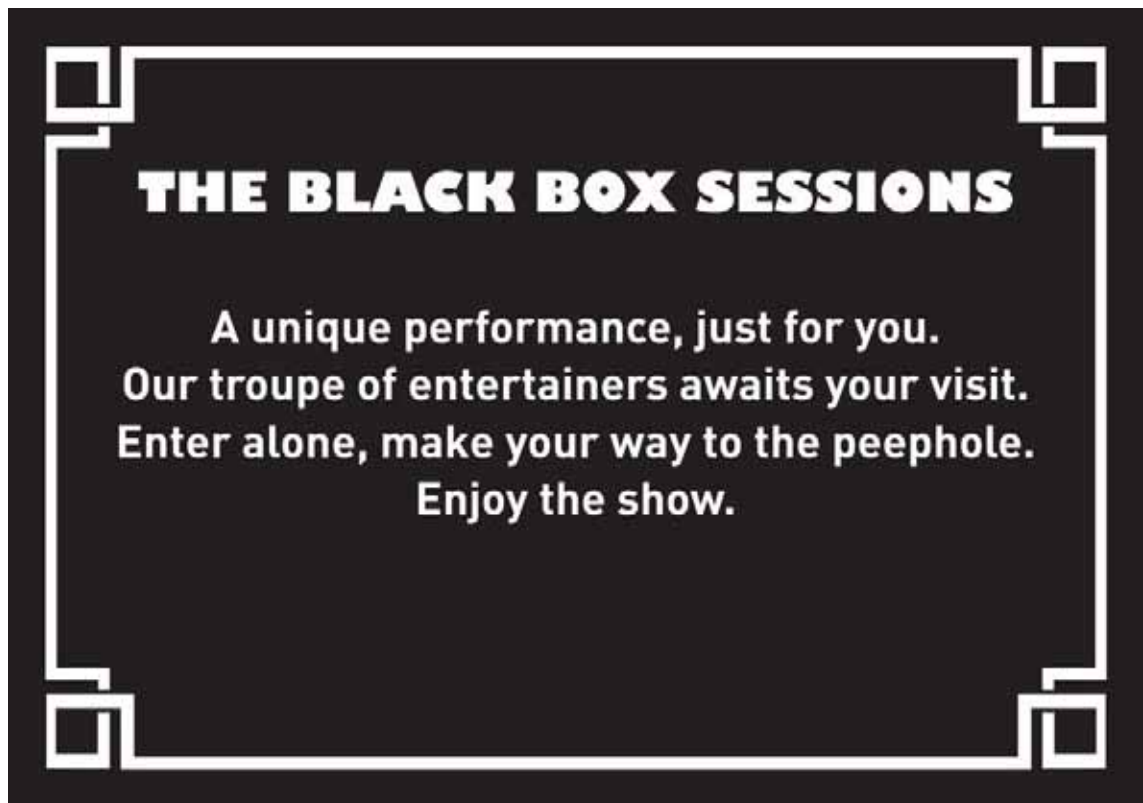
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Blackness does not spread out before me but touches me directly, envelops me, embraces me, even penetrates me, completely passes through me, so that one could almost say that while the ego is permeable by darkness it is not permeable by light. Eugène Minkowski

The technical evolution of the theatre has been a game played with darkness—not metaphorical or moral darkness (although that hasn't been lacking) but literally by depriving the audience of sight. It was Wagner, in pursuit of the *Gesamtkunstwerk*, who plunged the public into darkness and left the stage prominently lit. Rather than watching each other, the audience had their attention forcibly, minutely directed onto the stage itself.

The bright lights directed into the proscenium stage distracted attention from the real space of performance, which was in the relative gloom of the stands, unfolding in real time in the tenebrious corpuscle of each individual seat, but this nineteenth century solution was ironically a partial one. The spatial separation of audience and floodlit stage culminates in the absurdity of the fourth wall, the imaginary window onto a private scene. In such theatre, the efficacy of the performance was buttressed by a ludicrous suspension of disbelief, demanding on the one hand the pretence that the actor is unaware of the presence of the audience, and on the other hand the convention that each audience member does not interact with their neighbour for the duration of the performance. Only by these frayed rules could a conventional performance achieve a cathartic end.

Breaking those rules meant an end to the cleansing power of catharsis. The Brechtian ideal of theatre was a boxing-ring, with a skeptical public 'smoking and observing'. Rather than hiding the mechanics of illusion, everything knowable was to be brought to light, with props and subtitles exposed to the gaze of a critical audience. The sequential revelations of such enlightened theatre might have reduced the scope of darkness, but also worked to intensify the shadows where they fell. Consequently, Brechtian theatre always feels conspiratorial, always refers to a structure off-stage, one that is sometimes called *power*, but never names itself.

As always, when art produces two such antithetical solutions to the same problem, there is a third solution latent within them both. Alex Davies knows the power of pitch blackness, the hallucinatory intensity brought on by sensory deprivation. Crepuscular blackness is not empty, it is dense. Blackness envelopes our senses, depriving us of sight—an experience of being closed in or shut down—then it touches, rubs up against and pierces us. The initial enclosure of darkness becomes an opening, and blackness flows freely through us. Whereas the world of light is made of surfaces, skin, clothing, darkness floods the boundary that separates self from world. As Minkowski wrote, 'the ego is permeable by darkness'.

The theatre of Davies dispenses with the prop of the fourth wall, and literally places the performer and the viewer together into a single intimate and enclosed space. What happens there is experienced through CCTV, through the surveillance system that defines the unsleeping power of an anonymous state. Mutually digitally digested, the performer and the viewer are trapped in a proximity that plays upon the voyeurism and vulnerability of the audience member who only wants to *watch*, but finds themselves suddenly outnumbered. Within the relative safety of performance, the uncanny force of a partially deconstructed reality exposes itself. Pressed up against a peephole, the skull of the viewer becomes itself a black box. We cannot promise that you will feel cleansed.

Figure 122   *The Black Box Sessions,* catalogue essay by Adam Jasper

Figure 123 *The Black Box Sessions*, catalogue outside (3 way fold)
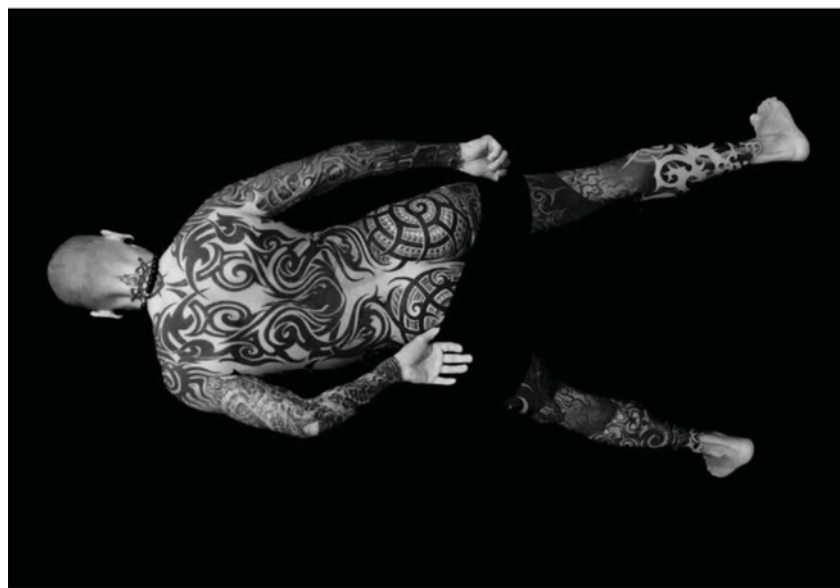
PERFORMERS

CELIA CURTIS

Your hostess Celia Curtis is a seasoned performer, whose career has spanned the far reaches of the globe, delighting and astounding audiences at every turn. The rigours of the road have not been kind, but we assure you her mind remains as sharp as a steel trap ready to guide you on your journey.

DIDI BRUCKMAYR

Performer, musician, dancing fool, Dr Didi Bruckmayr presents a range of traditional performances from his quaint and picturesque homeland. Try to be polite.

ANNABEL LINES

Darling of the cocktail set, Annabel Lines is the very epitome of the consummate cabaret artist. At one moment an enchantress, the very next a vision diabolique. Which will she be? Dare you find out?

ROLAND PENZINGER

Professional clown, cook and ex-circus director, Roland clearly never listened to his career advisor. Despite this he has achieved greatness of sorts and will be cooking up a dizzying casserole of dexterous feats.

CHAS GLOVER

After his crushing defeat at the hands of the Vladkovic twins, strongman juggernaut Chas Glover returns to Australia to dazzle you with feats of superhuman strength.

JUSTIN SHOULDER

Human-chameleon Justin Shoulder transforms himself via sculptural creature avatars. You may meet one of them. In the dark. Alone.

LAS VENUS

In the world of Las Venus life begins to spin like a magical melody carousel, an esoteric 78 turning endlessly under a crystal needle. Theremin and surf guitar interwoven as one. A moment of timeless beauty.

MATTHEW STEGH

Man of a thousand faces, Matthew Stegh puts even the master Lon Cheney to shame in this classic show. Your face, dear Art Lover, will present but one expression – that of astonishment!

PATRICK HUBER

Genius or madman? Does he even know himself? The unpredictable Patrick Huber will unleash a maelstrom of creative energy in the tight confines of the performance space.

SCOTT SINCLARE

This guy is just weird. You'll see.

SPECIAL GUESTS

MIKE LIRA

ADAM MADA

MARTY JAY

BIG JUDY

AVANT LE MONDE

LIAN LOKE

LUCAS ABELA

* Note due to prior commitments, not all performers can be present at all times

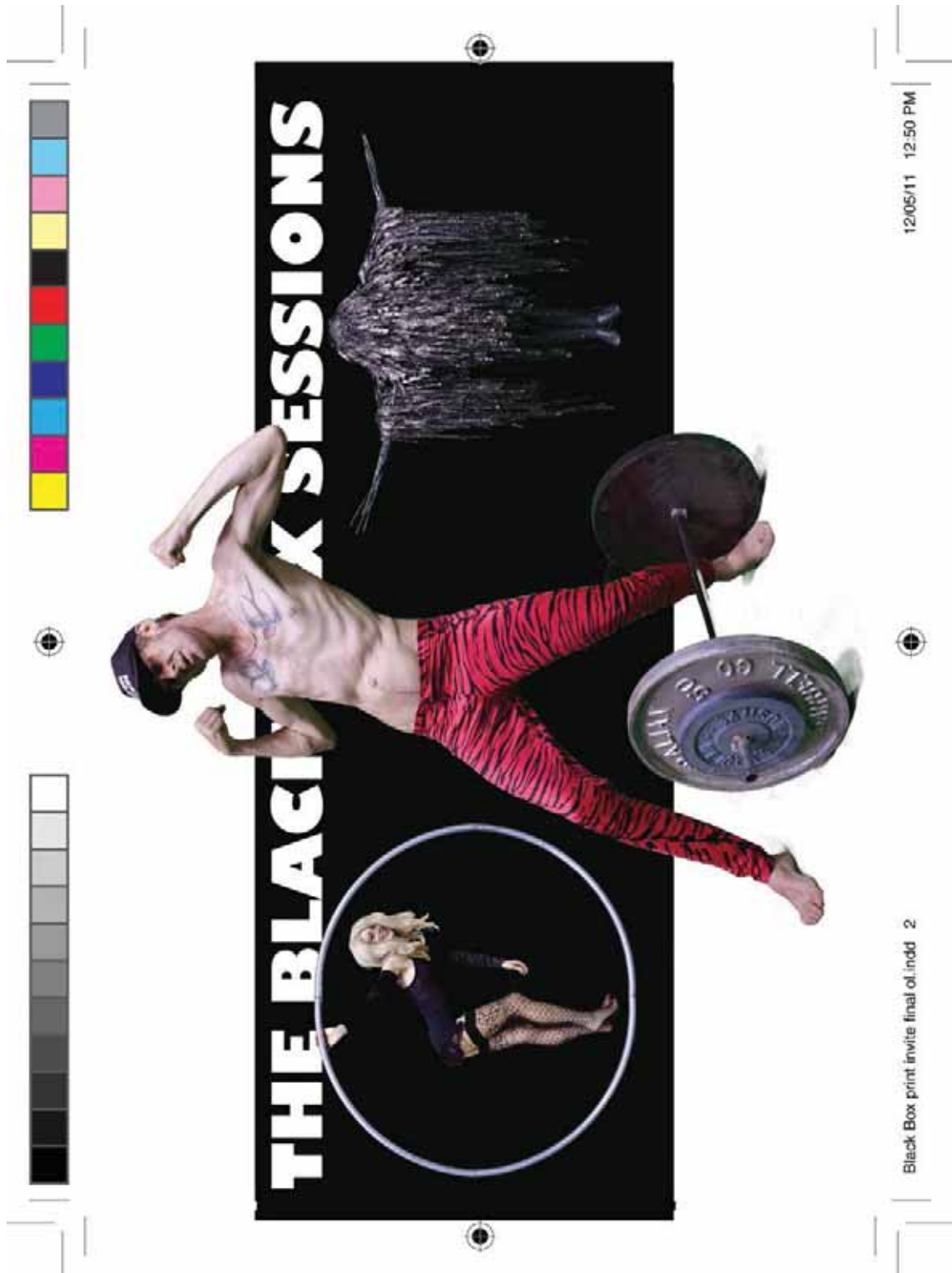Figure 124   *The Black Box Sessions*, catalogue inside (3 way fold)

Figure 125   *The Black Box Sessions*, flyer front

THE BLACK BOX SESSIONS

31 MAY - 15 JULY
OPENING TUESDAY 31 MAY 6-8PM

The Black Box Sessions presents a spectacle writ large. Artist-in-residence, **Alex Davies** has created a mediated personal theatre space which shifts the relationship between performer and spectator. Experience intimate performances in a pitch-black space by a talented troupe of international entertainers, captivating crooners and burlesque beauties.

ACCOMPANYING PUBLIC PROGRAM:
MONDAY 6TH JUNE 6.15-7.15PM
Alex Davies in conversation with Andrew Frost
RSVP to **utsgallery@uts.edu.au**

IMAGE / *The Black Box Sessions* performers Annabel Lines, Chas Glover, Justin Shoulder. Photo: Alex Davies

Supported by Time's Up. This project has been assisted by the Australian Government through the Australia Council, its arts funding & advisory body UTS Gallery supported by Oyster Bay Wines & Coopers. Media Partner: 2ser

UTS:GALLERY / Level 4, 702 Harris St Ultimo / +61 2 9514 1652 / utsgallery.uts.edu.au / Mon - Fri 12 - 6pm

POSTAGE
PAID
AUSTRALIA

UTS:GALLERY
UNIVERSITY OF
TECHNOLOGY SYDNEY

Black Box print invite final ol.indd   1

12/05/11   12:50 PM

Figure 126   *The Black Box Sessions*, flyer back

Figure 127   *The Black Box Sessions*, press release

IV. The Black Box Sessions Reviews

The Black Box Sessions at UTS Gallery, Sydney 2011

Surveying your selves - Gail Priest

RealTime issue #103 June-July 2011(e-dition July 12)

You enter a dark corridor alone. It's an all enveloping darkness that seems to suck the breath from you, but by sliding your hand along the wall you can navigate towards the small light that eventually appears in the distance—a peephole. Peering in you see a small screen displaying infrared cctv footage of a room. Someone is already in the room over in the corner with their back to you. You wonder, "who is that looking into that peephole?"

Some people recognise themselves faster than others and this moment of realisation is almost enough in itself. Looking at yourself looking at yourself—seeing one 'you' who is thinking about how it is seeing this other 'you'—creates a phenomenological mirror of infinity that leaves you gasping. But there is more to Alex Davies' *The Black Box Sessions*. You are here to see a show that will be performed in this room, just for you.

I peeped at three acts randomly selected from the 30 performances by Australian and international performers. The lovely, leggy Annabel Lines escaped gracefully from a sack to hula-hoop for me; Didi Bruckmayr revealed his fully tattooed corpus in a rough striptease; and Patrick Huber tried to tell me, in his rambling way, about what a great actor he is. The performances are not always astounding and some are looser and more haphazard than others.

The most successful moments occur when actions reinforce the sense of the darkened space and the performance is directed specifically to you. But even when the illusion is faltering, the sense that the action is taking place just behind you is hard to shake, heightened by the well-spatialised audio. The compulsion to look behind is strong, but when faced with the void you turn back to the screen for the mediated comfort of yourself and your performer.

The Black Box Sessions continues Davies' explorations into mixed reality environments first successfully realised in his installation *Dislocation* (2005, see RT70 and RT88). In this earlier work the room is visible in both the virtual/screen and real worlds, and the apparitions don't tend to do much that is out of the ordinary. They are looking at the work as you are with the occasional anomaly of a barking guard dog or an argument.

This mundanity creates a kind of ruptured reality. In *The Black Box Sessions*, the disorientation created by the utter darkness—the inability to match the screen view with the physical space—and the overlaid construction of the peep show creates a much stronger sense of entering a consensual fantasy. This is reinforced by Davies' extension of the peepshow premise out in the foyer where a monitor placed on the gallery attendant's desk shows CCTV footage of the waiting room (with you in it) and the adjoining dressing room with the performers undertaking their pre-show preparations. It's a nice touch though easy to miss if you don't have to wait too long to enter the corridor.

Like all Davies' works, *The Black Box Sessions* is impressive from a technical perspective as the real-time video interaction is seamless and its complex machinations completely invisible. Davies' playful attention to detail really invites you into this fantasy world. However this finessing reinforces the central wonder—first established in *Dislocation* and iterated here—of the perceptual and conceptual mind-bending that occurs as you try to reconcile your position in this world, being simultaneously inside and outside yourself. You will never look at yourself in the same way again.

Alex Davies' work in *Trace Elements: Spirit and Memory in Japanese and Australian Photomedia* at the Performance Space in 2009 was one of the standouts of that particularly strong show, but he surpassed it at last month's UTS Gallery show *The Black Box Sessions*. Using the same technology as previously but amping it up to a still more sophisticated level, he created a viewing experience which was intriguing, unsettling and confounded all expectations. It's a bit lame of me but really the best way to describe this work is to describe my physical experience of it. Entering the gallery revealed an empty reception desk and a new blank return wall with a black curtain entry. These entries usually promise a big screen complete with viewing seat behind them but when the curtain closed behind me I was in a darkness so total a kind of animal nervousness engulfed me. I broke the rules and used the light of my phone to look around, which was still more nervewracking because it revealed absolutely nothing. I was starting to wonder if I was having a new media 'downtime' gallery experience. Eventually I spotted a pinprick of light. Unsure whether it was a genuine, artist-endorsed pinprick or just one that was overlooked when the final lightproofing was happening, in the absence of anything else I edged towards it, running my fingertips along a wall to ensure I didn't drop into an abyss. The pinprick, when I reached it, was a minute peephole in the wall. And when I looked through it I saw myself, in black and white, looking through the peephole. At least I knew I was in the right place. But there was something on the floor behind the little black and white me that looked like a body bag. Naturally I spun around in the space and waved my phone ineffectually towards where the body bag should be, and naturally there was nothing my phone's light could show me. Back at the peephole, the body bag started writhing: a woman's foot emerged, then a leg, and for the next few minutes I was treated to a fabulously athletic, funny and inventive burlesque performance as the performer slithered out of the bag and danced behind the little black and white me. She slyly inclined towards me at several points, acknowledging our sharing of the space – but were we? *The Black Box Sessions'* great success is in how cleverly and viscerally it messes with perceptions of interactivity, performance, audience/performer boundaries and the fourth wall, surveillance technology, the intimate yet distancing effect of technology in general, live versus recorded theatre, narcissism and

voyeurism. There were echoes of early David Lynch (especially the remote surrealism of *Eraserhead*) and something of the gleeful sexuality of Weimar theatre. The final twist: on the way out I glanced at the monitor on the still-empty reception desk. One of its four surveillance images of the gallery showed a man in a dressing room preparing for a performance. I still don't know whether it was live or not, but it meant I was kept guessing about what I'd seen and experienced all the way out the door.

V. Häusliches Glück Production Stills

Figure 128   *Häusliches Glück*, production still, narrator

Figure 129   *Häusliches Glück*, production still, narrator

Figure 130   *Häusliches Glück*, production still, Wilhelm shaving

Figure 131   *Häusliches Glück*, production still, Wilhelm shaving

Figure 132   *Häusliches Glück*, Act 1 production still, killer's entry

Figure 133   *Häusliches Glück*, Act 1 production still, Wilhelm notices the killer enter

Figure 134   *Häusliches Glück*, Act 1 production still, Wilhelm and killer struggle

Figure 135   *Häusliches Glück,* Act 1 production still, Wilhelm's murder

Figure 136   *Häusliches Glück,* Act 1 production still, killer looks towards sound of neighbours above

Figure 137   *Häusliches Glück,* Act 1 production still,
              killer standing over Wilhelm's body before departing from bathroom

Figure 138   *Häusliches Glück*, Act 1 production still, killer enters narrator's room

Figure 139   *Häusliches Glück*, Act 1 production still, killer and narrator struggle

Figure 140   *Häusliches Glück*, Act 1 production still, killer and narrator struggle

Figure 141   *Häusliches Glück*, Act 1 production still, detail of fallen lamp during struggle

Figure 142   *Häusliches Glück*, Act 1 production still, narrator dead

Figure 143   *Häusliches Glück*, Act 1 production still, narrator dead

Figure 144   *Häusliches Glück*, Act 2 production still, Linz 09 attendants

Figure 145   *Häusliches Glück*, Act 2 production still, Linz 09 attendants

Figure 146   *Häusliches Glück*, Alex Davies with cast during production

Figure 147   *Häusliches Glück*, Alex Davies demonstrating razor SFX during production

Figure 148   *Häusliches Glück*, Andreas Mayrhofer and Luis Wolfmuller during production

Figure 149   *Häusliches Glück*, Andreas Mayrhofer and Maria Fliri during production

Figure 150   *Häusliches Glück*, lightning simulator test in bedroom

Figure 151   *Häusliches Glück* – Markus Luger and Andreas Mayrhofer preparing window cavities in kitchen

Figure 152   *Häusliches Glück*, Andreas Mayrhofer rewiring apartment for DMX lighting control

Figure 153   *Häusliches Glück*, early stages of kitchen installation

Figure 154   *Häusliches Glück*, kitchen before and after installation

Figure 155   *Häusliches Glück*, narrator's room before and after production

VI. Häusliches Glück Installation Stills

Figure 156   *Häusliches Glück*, entrance stairs

Figure 157   *Häusliches Glück*, installation entrance (right)

Figure 158   *Häusliches Glück*, entry room / kitchen

Figure 159   *Häusliches Glück*, entry room / kitchen

Figure 160   *Häusliches Glück*, entry room / kitchen detail

Figure 161   *Häusliches Glück*, entry room / kitchen detail

Figure 162   *Häusliches Glück*, entry room / kitchen detail

Figure 163   *Häusliches Glück*, bathroom

Figure 164   *Häusliches Glück*, bathroom

Figure 165   *Häusliches Glück*, bathroom detail

Figure 166   *Häusliches Glück*, bathroom detail

Figure 167   *Häusliches Glück*, bathroom detail

Figure 168   *Häusliches Glück*, bathroom detail

Figure 169   *Häusliches Glück*, bedroom

Figure 170   *Häusliches Glück*, bedroom

Figure 171   *Häusliches Glück*, bedroom

Figure 172   *Häusliches Glück*, bedroom

Figure 173   *Häusliches Glück*, bedroom detail

Figure 174   *Häusliches Glück*, bedroom detail

Figure 175   *Häusliches Glück*, cupboard blocking access to narrator's room from bedroom

Figure 176   *Häusliches Glück*, narrator's room sightline from gap between cupboard

Figure 177   *Häusliches Glück*, narrator's room mechanical and control apparatus (not visible to audience