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The magic of projection : augmentation and immersion in media art

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THE MAGIC OF PROJECTION

Augmentation and Immersion in Media Art

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Title page: The Illuminator, Projection onto the Verizon Building, New York, 2011. Photo: Jenna Pope.

Moniek – Of Blessed Memory



Image 2: Delft tile panel, technical antiques catalogue, Breker.

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PARIS.

Acknowledgement

I visited Lahore in Pakistan in 2003. I got myself a map of the city like a good European tourist. I soon realized that this map was too old and too sketchy to get around. A Pakistani friend observed my scout-like eagerness and laughed; "why do you rely on a piece of paper when there are hundreds of 'maps' walking around?" He said, and winked, "why don't you ask the 'natives'?" Writing a thesis was like finding my way around Lahore without a map. I have asked several 'locals' for directions and received much support. Some have shown me points of interest, others pointed me into the right direction or walk with me part of the way. I surely would have lost my way without them.

I feel deep gratitude for the discussions and advice I have received from my supervisors. I am very sad that Moniek Toebosch could not see the final stages of my research. Nevertheless, my conversations with her have been inspiring and I often regretted not having taken the opportunity of talking to her much earlier when we were both at the Rijksakademie van beeldende kunsten in Amsterdam. Professor Kitty Zijlmans has throughout the process of the PhD project encouraged me with her genuine interest in my particular motivations as an artist. Professor Janneke Wesseling's exacting questions and meticulous eye for grammar has pushed the boundaries of this text. My advisors have all been exceedingly generous with their time and ideas.

Throughout the duration of my PhD trajectory the Academy of Creative and Performing Arts, Leiden, has been generously funding my travels to the Hague and Leiden. They have also contributed to the thesis exhibitions as well as this publication.

Other 'locals', friends and colleagues, have given me directions and helped shape my thinking. From the earliest beginning on Professor Nadja Schneider of the Humboldt University Berlin has encouraged my steps as an artist in the academic arena and I have immensely benefited from her critical and constructive advice. My long year mentor and fellow projection artist Anna Anders has read an early draft of this text. Her comments have been important directions. Curator Helen Pheby has generously read through the final draft of the text. I also want to thank Moses Blum, who's editorial and scholarly advice has made me re-chart my route on several occasions. But first and foremost, I thank my family, they have been my compass; ever-present and supportive.

Finally, I should like to mention a place that I have often visited during my research. I spent many months at the reading rooms of the British Library in London and have been able to consult almost every book imaginable within a few hour's notice.

Image 3: Paul Gavarni, frontispieces, *Le Diable a Paris* (Paris: J. Herzel, 1845).



Prologue
Artist Statement

Image 4: Sophie Ernst, *Victory*, video sculpture, 2004.

For in and out, above, about, below,
'Tis nothing but a Magic Shadow-show,
Play'd in a Box whose Candle is the Sun,
Round which we Phantom Figures come and go.

The Rubaiyat of Omar Khayyam (1048–1131)[1]

1 FitzGerald (2009) p. 39

As a 19 year old high-school graduate I started an apprenticeship as an industrial mechanic. I worked at the BMW factory in Munich for three and a half years. Our first assignment, which lasted about six months, was to file down a piece of metal, day by day, bit by bit. We were not making something, but learning to use the most basic tools and materials that we would employ for the remainder of our professional lives as mechanics. After six months of sawing, filing, measuring metal I could handle the material more or less intuitively. Three years later, I designed and built a small printing press as my **'**Gesellenstück**'**, my degree piece. Next to handling metal, I had studied mechanics, hydraulics, physics, material science even history of mechanics. To be able to execute my craft I needed physical as well as theoretical knowledge.

In my view, contemporary art is largely a discursive intellectual endeavour. As an artist I am not a producer of objects, but I see art as "a *speculative tool* for rethinking current social and political conditions" [italics S.E.] as curator Charles Esche has put lucidly.[2] I understand art as 'modest proposals'. Esche introduces 'modest proposals' as "essentially speculative in that we imagine things other than they are now yet those speculative gestures are intensely concrete and actual. They avoid the clearly fantastical as well as the hermetic purity of private symbolism in order to deal with real existing conditions and what might be necessary in order to change them."[3]

Nevertheless, the day to day practice of art contains important elements of craft. Like a mechanic, I need physical as well as theoretical knowledge of my materials and tools. My intention in writing this thesis was to take an in-depth look at the principal medium I use in my sculptural practice: projection. The underlying question of my research is how do we experience projections and what are image traditions projections relate to. Besides 'rethinking current social and political conditions', I consider how to communicate this to my audience. With each work I question how are projections experienced. I ask questions about projection as a material entity, questions about the machine (for instance a media projector) or image carrier or format (slide or data file). Making a work also involves questions about projection as a communication medium and what image traditions projection relates to. Yet, these questions are posed foremost with a practical interest: how to create a desired experience for the viewer.

2 Esche (2005) p. 3.

3 Ibid.

I took the writing of this text as an opportunity to question projection in general. The desire to rethink projection as a material and medium not only grew out of my praxis but also from conversations with colleagues: artists, art-students, filmmakers, projectionists, media technicians. The text is directed at these colleagues first and foremost. I see it as a small step in an ongoing conversation between practitioners on the application, effects, technology, historical bearings and social impact of projection as a medium. Nonetheless, I hope to engage art historians as well as students of media-studies, albeit from my perspective of practice. The debate I engage in is not a purely academic one and is held in erratic places and forms. I refer to writings from the 1920's on the possibilities of film by practitioners such as Moholy Nagy, van Doesburg and Vertov, I also include contributions such as the practical instructions on projection and philosophical interpretation of the imaginary by 18th century scholar Eckartshausen. Much of contemporary theory on video- or projection-art has been written by artists.[4] What sets this field of enquiry apart from art history or media studies is that as an artist I take on two perspectives: projection as a material in praxis as well as a medium in communication with audiences.

The theoretical research into projection builds a body of knowledge useful to the craft I develop as sculptor.[5] In my projection praxis the research is embodied in the art works. In the thesis text I hope to make this explicit and to give insights into material and medium. In what follows I am taking a predominantly *instrumental perspective* to artistic research.[6] Tools and materials are not neutral components of an art work. Even when we are not explicitly aware of the material makeup or the interface of mediation, they influence our experience of a situation. Both material and medium embody certain meanings and history and will trigger associations.[7] I work with the projection of light in relation to sculpture. The materials I use are partly ephemeral: light, projected images, sound, conversations, narrated memories,

4 The writings by artists and filmmakers such as Tony Oursler (2001), Catherine Elwes (2005), Michael Rush (2005), Stan Douglas (2009), Valie EXPORT (2011), Jonas Mekas (2011), Chris Meigh-Andrews (2014).

5 Borgdorff (2012) p. 18.

6 Henk Borgdorff distinguishes four (not mutually exclusive) perspectives on the relationship of theory and practice in artistic research, namely, instrumental, interpretative, performative, and immanent. Borgdorff (2012) p. 17.

7 For instance '*remadiation*'. Bolter and Grusin explain how a new medium re-mediates older forms of mediation. They define *remediation* as a "complex kind of borrowing in which one medium is itself incorporated or represented in another medium." Bolter and Grusin (2000) p.45.

partly concrete: architecture, objects, projection- and sound-technology. Together they can layer images, objects, and meanings extend our sense of space and immerse us into virtual worlds.[8]

It is often said that video is a new medium in art. I studied sculpture in the mid to late 1990's and video or computing was not even part of our curriculum. In a pre-internet world it was not easy for a student at a provincial art school to find access to the theoretical discourse on video art. The few publications on video art I found in the library would either establish video art as a medium void of history or project its origins back to television, performance art, experimental film or film in general. It was even harder to see video art of the past decades. Those video works I saw in exhibitions in the late 1990's were mostly related to an experimental film tradition or used film as their subject.[9] There were a few exceptions that left deep impressions.

I believe I saw *Tall Ships* (1992), an interactive video installation by Gary Hill, at the Stedelijk Museum in Amsterdam.[10] I was fascinated by the expanded sense of space it created and my feeling of immersion into the virtual image. I was largely oblivious to the interactivity of the work, it appeared magical. In 1998, I did a summer-course on video with Valie EXPORT. She showed us her work, experiments with layering and mirroring of images, and works that used projection in space as part of sculpture. Around the same time I saw Tony Oursler's video sculptures *Eyes* (1996) at the van Abbe Museum in Eindhoven, spheres suspended in space with eyeballs projected onto them. Another work I noted was Nalini Malani's *Hamlet*

Image 5: Gary Hill, *Tall Ships*, film still, 1992. Henry Art Gallery, gift of the Lannan Foundation.

8 To speak with Bolter and Grusin, I *remediate* the medium of drawing and oral narration of memories by integrating them into the video installation, achieving some transparency when apparently letting the viewer witness the creation of the memory before their eyes. Bolter and Grusin (2000) p.30.

9 For instance: Douglas Gordon, *24 Hour Pyscho* (1993), Tacita Dean, *Disappearance at Sea* (1996) Eija-Liisa Ahtila, *Consolation Service* (1996-99), Pierre Huyges, *L'Ellipse* (1998), *The Third Memory* (1999), Stan Douglas, *Overture* (2001).

10 The work comprised of a long narrow corridor of projections at either sides. Viewers walking through the corridor triggered video images of people approaching and retreating.

Machine (2000) which she installed at the WWVF in Amsterdam. The work spread across the floor as well as over all the walls of the gallery.

In all these works the experience of projection was much more immediate than I knew from the cinema. Projections extended the sense of space, layered images and time, and spread over three-dimensional screens. Oursler's time-stream introduced me to a history of projection in which these attitudes had been applied and tested in the past.[11] The time-stream lists events in the history of the projected image from disparate fields such as optical science, spiritualism, and Vaudeville entertainment. To me, the ambivalence of projection as a material made it attractive for sculpture.

Let me be more specific about my own work. It is, as already indicated, a quasi-documentary spatial organisation of images, objects, sounds, and narratives. The dialectical confrontation of these elements is intended to capture the observer into the immediate aesthetic event and, at the same time, to produce a reflection about its meaning. For example, a cockfight, as they take place in South East Asia, Central America or Indonesia, together with its typical sounds is projected onto the 'sublime' classical sculpture of the Nike of Samothrace. I confront the viewer with the fact of victory being the result of blood-shed, cruelty, and gain-seeking [***Victory***, 2004]. I have never felt an urge, or the need for that matter, to interpret my work: you experience what *you* experience. Rich countries have always attracted migrants from poor regions, from ancient Rome to the United States. When I project young South Asian men talking about their wishes to emigrate to the US onto randomly stacked cardboard boxes, the viewer becomes intuitively aware of the utopian character of such wishes and of the sweet dreams they produce nevertheless [***No place like America***, 2008]. I try to avoid unreflected commiseration by repeatedly



Image 6: Sophie Ernst, *Lightwalking*, performance, de Fabriek, Eindhoven, 1999.

11 Tony Oursler, *Timestream*, internet timeline of the moving image, MOMA (2001) http://www.moma.org/interactives/projects/2001/timestream/ (accessed on 15.2.2016).

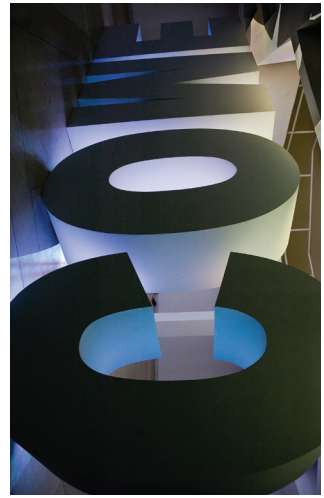




Image 7, 8: Sophie Ernst, *Jannat*, video installation, Alhamra Art Center, Lahore, 2006.

referring to the interface.[12] If a Palestinian writer tells the story of his home left during the Naqba[13] and is plotting the floor plan, I do not show his face, but only his drawing hands thus distancing the narrative from the all too natural direct sympathy [***Home***, 2006-2012].

In all of these and other works, I use projections to visualize the dialectical confrontation of the moving image with its screen, gesturing to historical events, real-world objects, previous artistic representations, and personal stories. What we get is a new narrative linking different historical periods, different regions of the globe, and different personal experiences. Projection as a 'language' is an intricate medium. As a user of this 'language', it took me a long time to understand its 'semantics' and its 'grammar'. When I started to work as an artist some fifteen years ago, my approach was rather naïve being enthralled by the immediate effect of a light projection [***Lightwalking***, 1999-2000]. In the course of time, I became aware of the manifold expressive possibilities of light in space. Its demonstrative use is much older than film or video.

In order to trace different techniques, different applications, and different effects and associations, I have gone into the history of projection. Quite early, projection was used to astonish, to surprise, to overwhelm. In a similar vein, I have projected paradise-like images, as you may see them on South-Asian trucks, underlayed, however, with the sound of military aircraft, onto very large plywood letters C-O-M-E arranged in an inviting perspective [***Jannat***, 2006]. Later on, the functions of projection were secularised "ter lering en vermaak", to educate and entertain, of which todays cinema and power-point are obvious examples. At the same time, projection became independent as a medium in art.

It is as such that I think projection has to be studied. Not only its instrumental properties, but also the manner in which it can be used as a medium in artistic praxis. In extension of my occupation with visions of paradise and utopias, I have interviewed madrassa[14] scholars on their idea of heaven. Their faces are projected onto the classical

12 The interface is the boundary between medium and viewer; i.e. paint on canvas, projection screen, computer windows, a touch pad. Or as Illingworth and Pyle define: interfaces refer to the "common boundaries 'between two systems, devices, or programs'". Gane and Beer (2008) p. 53

13 Naqba in Arabic literally means disaster, refers to the exodus of the Palestinians in 1948.

14 Madrassa in Arabic means any kind of school, here: Islamic religious school.

heads of the *Dying Gauls*.[15] The first approach was purely visual: the two types of heads fit extremely well [***Dying Gauls***, 2007]. May we hypothesize from this fit a similar existential situation over more than 2000 years? Any scientific method of testing such a hypothesis would be at a loss. The suggestive layering of projection sets the viewer thinking.

Next to an historical analysis, my thesis explores the expressive possibilities of projection which we find in the dichotomy of *empathic immersion* and *critical augmentation*.[16] Most art works exhibit a combination of both empathy and criticism, but the one or the other may be preponderant. When I 'augmented' the monument of Queen Victoria in Wakefield with a loud-hailer and let her apologize for imperialism [***Silent Empress***, 2012], the onlooker had little opportunity to 'immerse' himself in the feelings of the subjugated peoples. He was assumed to be knowledgeable about the facts. The objective of the *Silent Empress* and *Victory* are rather similar: to confront memorials of victory and domination with the implications for the victims. The critical confrontation by way of augmenting projection of images and sound can produce, however, quite different reactions: the viewer of *Victory* is irritated; the viewer of *Silent Empress* is provoked, which adds a performative dimension to this work, namely the annoyed intervention of the city administration.[17]

When I embarked on the present research, I was curious to find out more about an image tradition beyond the field of art history. I asked why projections are always experienced cinematically, suspending one's disbelief?[18] I looked for historical examples of projection used in a sculptural way. By sculptural I mean projections

15 The sculptures of the *Dying Gauls* (Epigonos, 1st century BC) were commissioned in commemoration of the victory of the Greek over the Galatians, Celts from Asia Minor. They are part of a larger group of defeated enemies made up of Gauls, Amazons, giants and Persians. Unique in the representations of these enemies of the Greek is that they were depicted without a triumphing victor. They can be seen as defeated but heroic warriors.

16 An interesting link can be made here to the concepts of immediacy (it suggests a unified space and makes the act of representation transparent) and hypermediacy (it offers a heterogeneous space and makes acts of representation visible). Bolter and Grusin (2000) p. 34. A significant discrepancy between augmentation and hypermediacy is that augmenation, in my reading, is space based.

17 Council chiefs not amused by art installation, The Sun, 2 july, 2012. http://cda.uat-thesun.co.uk/sol/homepage/news/4406683/Council-chiefs-not-amused-by-artinstallation.html (accessed on 15.2.2016).

18 Also Bolter and Grusin observe: "The logic of immediacy has perhaps been dominant in Western representation, at least from the Renaissance until the coming of modernism, while hypermediacy has often had to content itself with a secondary, if nonetheless important, status. Sometimes hypermediacy has adopted a playful or subversive attitude, both acknowledging and undercutting the desire for immediacy." Bolter and Grusin (2000) p. 34.

that expand into space, not simply become visible on a flat screen. To emphasize the difference, I categorize projections as either immersive or augmentative. The terms immersion and augmentation can mean many things in different contexts. In what follows I will use them strictly as technical terms. I understand immersive projections as *screen based* projections presenting a secondary (cinematic) reality, whereas augmentations are *space based* projections, mapping an image onto space. Without doubt all projections need a *screen* to materialize and *space* to be experienced in. What I refer to here are two different attitudes towards space and screen. An immersive projection will emphasize the virtual space of the projection over the viewers space, an augmentation is a *mixed reality* of both virtual and material space. At the level of experience, immersive projections may solicit suspension of disbelief and evoke an empathetic response, whereas augmentations will tend to make the familiar strange and could create a critical distance.[19] The distinction reverberates Bertolt Brecht's theory of *Verfremdung* (distancing). These findings made me address my artistic practice in a new way.

19 In the course of my research I formulated a third response. Augmentation can also be experienced as 'magical' in the sense of an analogical demonstration which is a magical symbol visualizing the invisible. For instance, as is the case of mobile devices, online applications augmenting our everyday experiences.



Introduction

Image 9: Lanternist attacked by phantoms, animated lantern slide, second half of 19th century, Centre National du Cinéma et de l'image animée dépôt à la Cinémathèque française.

Are projections *speculative tools* or pure magic?[20] Projections are the main material of my art works and with each work I make as an artist I ask: how do we experience projections? In the following I will consider how experiences are created using projections beyond the scope of my art work. I ask how space is constructed using projections in contemporary art and which cultural practices do artists apply. Projections are everywhere today. We are witnessing a fundamental change from framed projections we *immerse* ourselves in (cinema) to virtual images layered onto everyday space.[21] Virtual images expand our understanding of space, one could say they *augment* space. This text aims to analyse the expressive possibilities of projections and the image tradition they relate to. My main argument rests on a distinction between immersive and augmenting projections.

Since the 1960s, image projection and the cinematic have become more and more pervasive in contemporary art.[22] To some art and cinema cannot anymore be seen separately.[23] To others the experience of "video is quite magical, almost sorcery".[24] When I enter a gallery as a spectator, I see video works spread onto the walls in dark viewing rooms, sometimes divided over several screens or projected onto surfaces suspended in space. I walk between screens, I am surrounded by projected light, I experience time splits, and feel transplanted in space. This is what sets cinematic *video-art* apart from traditional cinema: the immersive experience is not static.[25] To me it appears that this immersive mode of projection and its relation to cinema dominates projection art and large parts of the theoretical discourse around projection- and media-art today.[26] That is not to say it is the only way projections

20 Speculative tools see Prologue.

21 Annie van den Oever even speaks of a medium-specific period in history; a time when technological novelty makes the familiar look strange. Oever (2010) p. 34.

22 Leighton (2008) p. 7.

23 "[M]oving image has become a privileged form for artistic experimentation and communication." Esche (2008) p. 5. On the relation between film and video art see also Iles (2001), Kotz (2008) and Spielmann (2005).

24 *4 Art: Hedendaagse Kunst - Fiona Tan*, Avro, Dutch public television, 7.11.2012. http://web.avrotros.nl/kunstuur/player/8284689/videokunst (accessed on 26.3.2015).

25 Iles (2001) p. 33.

26 For instance exhibitions like: *Project Space*, Tate Modern, London, 2013, *Expanded Cinema*, Eye, Amsterdam, 2012, *The Cinema Effect*, Hirshhorn Museum, Washington, 2008, *Beyond Cinema*, Hamburger Bahnhof, Berlin, 2007, and publications like: Leighton (2008), Eamon, Bal, Colomina (2009), Trodd (2011), Balsom (2013).

are used by artists. In fact projection art in the 1960's was often a critique of the mediated image and the cinematic.

Under the influence of *structural film*, post-minimal projection art interrogated projection space, the apparatus, and cinematic codes.[27] Art historian Kate Mondloch observed how in the 'screen-reliant installation art' of the late 1960s and early 1970s the screen became the central object of investigation.[28] She sees Michael Snow's installation works as 'pivotal' to this period in projection art. Snow places emphasis on the materiality of the screen yet displays its properties as a virtual window.[29] Snow's phenomenological attitude can also be observed in projections by other artists of the period. For instance *Shadow Projection* (1974) of Peter Campus, or Nam June Paik's *Zen For Film* (1964). These works *dismantled* the projection mechanisms and offered an analytical form of viewing. Instead of stripping away, other projection works were *layering space* creating what on could call an augmented experience. (Joan Jonas's use of projections in her stage performances like in Mirage (1976), or Robert Whitman's *Cinema Pieces* (1964-65) combining sculpture and projection). This comes close to the principles of Expanded Cinema. 1960s Expanded Cinema connects to the 1920s avant-garde, constructivism, and pre-cinematic projection practices. These works do not absorb the viewer into *another reality* beyond the *screen*, but they extend *material space*, one could say they *augment* space. Augmentation of space is a *virtual* enhancement of *material reality* which we experience with our senses.

'*Reality*', '*virtual*,' and '*screen*' are returning terms and my use may require some clarification. I have no pretence to giving a definition or enter into any discourse on 'existence'. I will make a distinction between virtual- and material-reality in order to distinguish 'projected space' and the 'material space' we occupy. Anne Friedberg defines virtual as "acting without the agency of matter" in the introduction to her book *The Virtual Window*.[30] I often refer to *screen reality*, which I understand as a 'virtual reality' manifesting itself on a flat (cinema) screen. This may be misleading as any projection needs a screen to manifest itself. In case of a projection mapped

27 Trodd (2011) p. 11. *Structural Film* was an experimental film movement of the 60's and 70's, specifically looking at semiotics, material, and technological properties of film.

28 Mondloch (2011) p. 74.

29 Ibd.

30 Friedberg uses the definition of Webster's Dictionary. Friedberg (2006) p. 7-11.

onto a three-dimensional object, the 'screen reality' and 'material reality' are merged into a 'mixed reality', we see the projection 'augmenting' the object. I argue, instead of thinking about material and virtual reality in strictly oppositional terms, such as real/imagination, material/immaterial, outside/inside, hard/soft etc., we might understand reality and imagination through the idea of extension or augmentation.

To augment literally means to enlarge. When creating an augmented space, a projection enlarges space, but how exactly? Augmentation is defined in computer science as follows: "An augmentation combines virtual and material elements in real-time by registering or *mapping* a projected image onto three-dimensional objects or space"[31] [italics SE]. Augmentation and its technology has been a field of study in computer science for the past forty years and we now are witness to the first commercial applications. It seems, however, that *augmented reality* has received little attention outside of computer science and some enclaves of electronic art.[32] In contemporary art theory augmentation as a method seems to be largely absent. It is here where this text sets in: what drives the study are my observations on the difference of immersion and augmentation in projection art. I want to distinguish between screen based and space based projection and study their respective impact as well as the image traditions they link to.

Immersion and augmentation

A trope for immersion is the window or frame through which we enter a virtual world. Immersion presupposes a *willing suspension of disbelief*, and it implies an opposition between material reality and imagination. I turn to the idea of *willing suspension of disbelief* to explain how immersions prompt empathy. The term '*willing suspension of disbelief*' originated from literary studies and has its place in cinema theory. For the romantic poet Samuel Taylor Coleridge *willing suspension of disbelief* meant *poetic faith*.[33] According to his theory, a reader willingly suspends her disbelief while immersing herself in a literary illusion. The theory is based on

31 Ronald T. Azuma gives a definition of Augmented Reality that emphasises three aspects: Combines real and virtual, Interactive in real time, Registered in 3-D. Azuma (1997) p. 335.

32 This is partly a financial question as video mapping software and technology have not been readily available. We have seen many architectural mapping events as advertising spectacles. Now that software and technology are much cheaper, more experimental video mappings and audiovisual performances are surfacing. (32. Docfest Kassel, 12th Havanna Biennial).

33 Coleridge (1817) p. 267.

the assumption that there is a difference between material reality and imagination. Coleridge's literary concept can be extended to other art forms, such as theatre, film, and also painting.

I argue furthermore, in contrast to immersion, that augmentations can be experienced as magical. Let me be very specific about how I will use the word 'magic'. It is a word with a shady reputation. It may mean spellbinding and remarkable,[34] of another kind, or refer to something beyond rational understanding, occult, even abstruse. We may think of magic as trickery and foolish superstition.[35] The word magic is derived from the Old Persian Magi, which was a term used for priests.[36] Magi were also tutors of the sons of the Persian kings, and are the biblical 'wise men from the East'. In his book on magic Sociologist Marcel Mauss explains magic as *mimetic sympathy,* where the image takes on the properties of what is represented.[37] This comes close to an *analogical demonstration*. Historian of early modernity Koen Vermeir defines this concept as visualising something present but not directly visible, extending our vision 'magically'. I will come back to magic and analogical demonstrations in chapter 1 and 5.

As I understand it, our view of reality is altered when virtual images (information) are projected into material reality. Augmentations make our everyday world strange. An augmentation is magical when it is experienced as an analogical demonstration. These magical encounters can create critical distance by 'making strange'. This finds a parallel in the idea of *ostranenie* (Russian for making strange) and, in extension of that, Bertolt Brecht's theory of *Verfremdung* (distancing).[38] Brecht developed a theatre praxis that broke with the dramatic theatre of the age, which, in his words, had the spectator say: "Yes, I have felt like that too. – Just like me. – It's only natural. – It'll never change ... That's great art:

34 Like in the quote at the beginning of this introduction.

35 Bekker (1691) p. 1-4, Heyd (1997) p. 161-162.

36 Source: Encyclopaedia Iranica, online edition, New York, 1996-2016.

37 Mauss (2005) p. 84.

38 *Ostranenie* is a term coined in 1916 by Literary theorist Viktor Shklovsky. *Verfremdung* is sometimes translated as alienation. Alienation is mainly associated with *Entfremdung*. It is difficult to translate both words into English. Anne Halley and Darko Suvin translate *Verfremdung* as distancing. Bloch explains how Brecht's *Verfremdungseffekt* "occurs as the displacement or removal of a character or action out of its usual context, so that the character or action can no longer be perceived as wholly self-evident." Bloch (1970a) p. 121.

everything is self-evident – I weep when they weep, I laugh when they laugh."[39] Brecht intended to distance his viewer from the story unfolding on stage, exposing them to a critical discourse. The spectator should say: "That's great art: nothing is self-evident".[40]

To illustrate my ideas on how augmentation could create critical distance in projection art, let me give an example from my own practice: *Victory* (2004), a projection exhibited at the Museum für Abgüsse Klassischer Bildwerke in Munich. The work dealt with European appropriations of ancient Greek sculptures. A plaster copy of the Nike of Samothrace dominates the entrance hall of the Museum at the Ludwig Maximilian University. The museum is housed in what used to be the headquarters of the Nazi Party. This brought together two sensitive subjects. The Greek sculptures were displayed in the tradition of 'simplicity and grandeur'. And the building was seen by the museum staff with a certain amount of inhibition for reasons of German historic guilt with respect to their National Socialist past. Both issues seemed equally untouchable. I projected a video clip onto the Nike of an aggressive, noisy and bloody cock-fight, which I had filmed in Pakistan. The projection casts a large shadow of eagle like wings onto the atrium of the museum. The assistant curator and other daily users of the building were appalled: Firstly, one could not intervene in the grave Nazi architecture, and secondly, Nike, the goddess of victory, was soiled by the vulgarity and violence of the 'Asian' cock-fights. What appeared to be disconcerting to the museum staff was how the projection and its shadow, without penetrating any of the surfaces, estranged the familiar conditions. The projection made the space look strange. It created a critical distance to what the viewers were accustomed to seeing. In this way I see augmentation as a tool of distancing.

Field of study

The majority of research texts I consulted on video art have been written by artists.[41] This text is an artist's contribution to media art theory. It focusses on the role of projection as material for sculpture.. I started my inquiry into the theory of projection after fifteen years of working with this medium. My practice has been a

39 Brecht (2014) p. 111-112.

40 Ibid.

41 Such as Oursler (2001), Elwes (2005), Rush (2005), Douglas (2009), EXPORT (2011), Mekas (2011), Meigh-Andrews (2014).

valuable departure point as I have a theoretical as well as practical understanding of projection. This text should be read as an analysis of projection as material and medium. At the same time, it will expose the image tradition I work from. As already mentioned in the prologue, I wanted to learn more about projection beyond the field of art history. In this sense, I take a historic-analytical approach when looking at projection as a material in art making. This text is written as an exchange about praxis between artists using projection in their work and I hope to contribute to the ongoing discourse in our field.

You may have noticed an inconsistency in the above paragraphs. I have referred to projections as video-art, media-art, and projected images, I could add electronic-art or moving image to enhance the confusion. In the field of study, art using projection and the moving image, a common vocabulary has not been clearly established and there are different approaches to history, origins, and categorizations.[42] The common denominator is the use of the term '*media*' as a category. The Oxford dictionary defines media as a means of mass communication, which could include video, radio, television, film, photography, books and other print-media. Under the umbrella of media-art sub-categories could be projected images, sound-art, video-art, web-art, photography, television, or film. These sub-categories have very fluid boundaries.

Media-art is often regarded as a relatively young discipline positioned between film, television, and performance.[43] It has been explained through the development of its technology.[44] No doubt, technology plays a pivotal role in projected-image art. My interest in the history of projection is not from a technological point of view.[45] I want to focus on the projected not the projector.[46] In this text, I will be dealing solely with the category of image-projection. Projection does not necessarily imply a specific medium or technology. I include slide-, film-,

42 overviews that have been useful to me were Cubitt (1993), Spielmann (2005), Ilies (2001), Leighton (2008), Elwes (2005), McCarthy/Ondaatje (2002) and Westgeest (2015).

43 Rush (2005), Spielmann (2005).

44 Meigh-Andrews (2014).

45 A number of great studies have covered the history of projection technology. Gorman (2007), Heard (2005), Hecht (1984), Kittler (2010), Liesegang (1926), Mannoni (2000), Oursler (2008) Rossel (2004), Stafford/Terpak (2001), Wagenaar (2014), Zielinski (2002).

46 This may sound slightly flippant. I do not want to underplay the difference technology makes to projection – a flickering projection by a magic lantern using a candle, or a full-HD media projector with 10.000 lumen, will influence artistic choices.

video- or digital image-projections and, to some extent, light projection. Instead of projection, art historian Tamara Trodd uses the phrase *projected-image art* in reference to the seminal exhibition at the Whitney Museum in 2001 titled *Into the Light: The projected Image in American Art*.[47] Trodd sees projected-image art as distinct, even separate, from the tradition of (cinema-projected) artists' film. She says projected-image art has largely grown from an 'art-world context'.[48] Surrealism, Moholy-Nagy's '*New Vision*', as well as "the wider history of visual art in general" are influences she lists.[49] The 'wider history of art', in all its generality, may turn out to be too restrictive when we are looking for traditions, roots, and influences that projection art has grown from. Moholy-Nagy developed his theory on vision by looking at advertisement, design, popular media, engineering, and architecture.[50] Following his lead, I want to turn to visual art and the tradition of film, but shall also consider those instances of visual culture that are beyond the scope of art history, such as literature, mythology, variety entertainment, phantasmagoria, or religious 'superstitions', spirit media, and clandestine trickery.[51]

The historical examples I use are not intended to suggest a chronology of projection practices. I am not interested in genealogies of technical innovation. However, I observe a critical shift when immersion became articulated as the dominant paradigm in projection. The developments of new projection technologies in the early modern period coincided with a redefinition of ideas on reality. Magic was outlawed in favour of rational knowledge

47 The exhibition was curated by Chrissie Iles. Trodd (2011) p. 5.

48 Trodd (2011) p. 6/20.

49 She acknowledges one exception and names 'structural film' as a shared ancestor of film and projection art. Trodd (2011) p. 6-8.

50 One important outcome of his studies, the *Light Prop for an Electric Stage*, was a kinetic light projector. Moholy-Nagy (1930) p. 297-299.

51 Oursler makes this connection in his research and writings. See *optical timeline* http://www.moma.org/interactives/projects/2001/timestream/ (accessed on 10.4.2015).

Image 10: The Stark Cube. *Iron Man*, dir. by Jon Favreau (USA: Marvel Studios, 2008).

and the Enlightenment project aimed at dominating sight and exposing magic as visual error. Illusions were understood by 'suspending of disbelief', not as magic. Today we can observe a second shift in image culture: mobile computing layers virtual images into space as augmentations of our everyday. The projections make our surroundings look strange. If we give belief to the story about *Stark Enterprise* told in *Iron Man*[52], in the future augmentations developed by large corporations are going to dominate sight. This commodification is what the philosopher Ernst Bloch identified as the evil mode of strangeness. Bloch explained how alienation in a negative sense means a commodification of our lives. He also saw a positive strangeness, a *making strange* which makes us look up in awareness.[53] I suggest that, Enlightenment and todays virtualisation of our everyday lives constitute two fundamental moments in the history of projection.

Delimitation of research

During my research I came across many astonishing historical examples of projections.[54] However, it is not my intention to give an overview of the history of projection, or projection technology neither do I want to create an anthology of contemporary projection art, but I present capita selecta which are relevant to my artistic research. I mention only a few artists whose works seem especially relevant to my argument and I leave large gaps. For instance, I have not included shadow projections (Mona Hatoum, *Light Sentence* (1992) and Nalini Malani, *In Search of Vanished Blood* (2012)) or immersive light environments or spaces (such as we know of Otto Piene, Olafur Eliasson or James Turrell) mainly because I concentrate on projections generated by a projector as light source and image carrier.[55] I would have liked to give more space to works creating projection spaces

52 *Iron Man is a comic superhero from the 1960's*. The figure features in *Iron Man* dir. by Jon Favreau (USA: Marvel Studios, 2008).

53 Bloch (1970a) p. 121.

54 For more on the history of projection devices see the recent book of Willem Albert Wagenaar (2014) is a great overview, the The New Magic Lantern Journal is an inspiring resource and there are some wonderful web sites like www.luikerwaal.com, www.magiclantern.org.uk, www.f.waseda.jp/kusahara/Utsushi-e/Welcome_to_Utsushi-e.html, http://users.telenet.be/thomasweynants/history.html (accessed on 15.2.2016).

55 With the exception of Moholy Nagy the works I look at projection figurative images. Furthermore, in the literature I consulted on projection art, video- or media-art and art of the moving image, shadow and light projections do not find much mentioning.

(works by Diana Thater, Nalini Malani, Pipilotti Rist to name a few) or using architectonic screens (much admired by me: Aernout Mik) and bordering on immersion and augmentation. I do not mention some widely seen architectonic approaches happening outside of the gallery space. For instance, video mapping, VJ-ing and facade projections that are displayed at a great number of urban 'light festivals'.[56] I also mention far too briefly the influence of the World Exhibitions in regard of the development of spectacular projections. These commercial projection sites have been, and are, testing-grounds for projection technology. They show interesting links to the spectacle of the vaudeville and fair-ground, however, as I know from personal experience, they are rarely places of artistic innovation.[57] I have also not included the use of immersive and augmenting projections in theatre productions, whether it is Jesuit theatre, Goethe's interest in the magic lantern, the light projections of Loïe Fuller, a major sensation of the variété-theater in the late 19th century, the political theatre of Erwin Piscicator in the 1920's, the *Laterna Magika* of Prague, todays Broadway theatre and popular music concerts like late rapper Tupac's resurrection in 2012 by 'hologram'.[58] The use of projectors as stage tools is material for a study in its own right.

This study approaches projection from a European perspective. This framing is not only a matter of limited space. Claims about the distinction of real and illusionary space were a result of the European Enlightenment. It is the division of space, in fantastic and realistic, in screen space and material space, that I wanted to criticize. In my artistic work, I often experienced the space of screen as part of the corresponding reality, not separate from it. I therefore mainly use evidence from the European artistic tradition. My focus on developments in Europe does not imply that I think projection practices have developed in Europe in isolation. To give an obvious example: without the theories on optics by Ibn al-Haytham (Alhazen), scholar in 12th century Cairo, translated by the monk Erazmus Ciolek Witelo in the 14th century, Christiaan Huygens' could not have developed the

56 E.g. the annual Amsterdam Light Festival, Lux Helsinki, Light Festival Berlin, Lumiere London, Signal Festival Prague, Mapping Festival Geneva to name a few. In the field of advertisement: Urban Screen (Hamburg) http://www.urbanscreen.com, Urban Projections (London) http://www.urbanprojections.com (accessed on 15.2.2016).

57 In 1999-2000 I was the art-director of the *World Wide Projects* for the EXPO-2000 in Hannover Germany.

58 Pepper's Ghost projection at Coachella Valley Music and Arts Festival developed by 3D holographic projection company Musion.

lenses, that made the magic lantern effective. I agree with art historian Kitty Zijlmans when she says that "[f]or centuries art [or culture in general] has been fed by a diversity of cultural sources and impulses, and it can never been tracked down to only one point of origin."[59] I briefly refer to projection examples in India and Japan. By way of contrast I want to emphasize that the European developments of reality and illusion were by no means exhaustive or exclusive.

Structure of the thesis

The six chapters of the thesis do not follow a chronology, rather, they each constitute a facet of my research findings, placing immersion and augmentation in the context of visual art, visual culture, technology, literature and my own practice. While studying the literature on projection I found many illustrations, images and descriptions of projection experiments, inventions, and occurrences. For me this was one of the most pleasurable parts of the research: how might a projection experiment have looked, what might the audience have encountered? The inserts running along the main text are a reflection of this.

In chapter 1, *Immersion or Augmentation: Two Technical Terms,* I introduce the two main concepts I work with in this text, immersion and augmentation.

Chapter 2, *Image Projection in Contemporary Art: Almost Realities and Expanded Reality,* gives a brief overview of projection in contemporary art. I cite Chrissie Iles' three phases in projection art: a phenomenological, sculptural, and cinematic phase. Iles's chronology largely bypasses Expanded Cinema. I ask the question: can we look at projection art as a layering of space?

Chapter 3, *Conditions of Illusion: Performing or Staging Projections*, establishes how virtual space is articulated in visual culture. I want to find out how do we understand the 'reality' of a projected image. I draw upon several art historians to look at social and technical conventions of vision and illusion. I close with two examples from art history illustrating how a projection can be staged on a screen or how the screen can perform a projection.

Chapter 4, *An Image Tradition: Historical Examples of Projection,* briefly looks at the history of the magic lantern projection apparatus. Since its invention, the projector was used in disparate fields such as warfare, education, entertainment, charlatanry, church propaganda, and advertisement. I place the

59 Zijlmans (2007) p. 293.

emphasis on augmentation as a projection practice demonstrating how, maybe marginally, augmentation never has been absent from the history of projection.

The *Conclusion: The Magic of Projection,* examines immersion or augmentation as a transformative moment in stories. What I want to illustrate with the literary examples is how the use of frames enables willing suspension of disbelief and immersion, and that augmentations are seen as making the familiar strange.

The *Epilogue: Artistic Practice,* takes the initial question back to my practice as an artist. How do I create experiences using projections? To me projection is a medium with which to create propositions: possibilities in space. They are like a ventriloquist's dummy, saying out loud what is invisible or unspoken, yet inherently present in an object.

Projection PROTEST or SPECTACLE:

No Somos Delito[60] and The Illuminator

"Worlds first political protest by hologram" is the subtitle of a photograph of a public projection that took place in Madrid on the 10th of April 2015.[61] News on the demonstration against the disputed Spanish *Citizen Protection Law,* effective from the first of July 2015, went through the global media; *CNN*, *New York Times, de Volkskrant*, *the Daily Mail* as well as various online news services ran the story.

Image 11: The Illuminator, Snowden projection onto the Prison Ship Martyrs Monument, Fort Greene Park, New York, 2015.
Image 12: No Somos Delito, 'hologram' protest in front of the Congress building, Madrid, 2015.

The conservative Spanish government initiated the new law to curb citizens right of dissent, which has risen drastically in response to austerity politics and corruption. The law means that "[u]ltimately, if you are a person, you won't be allowed to express yourself freely. You will only be able to do it if you become a hologram". This is what it says on the *Holograms for Freedom* web site.[62] The slick project web site outlines the hologram protest, informs about the 'gag' law, and invites participation.

Only few days earlier another 'hologram' protest took place, this time in New York. A plaster bust of Edward Snowden had been installed on the 6th

60 We are not crime.

61 The New Yorker, April 20, 2015 http://www.newyorker.com/news/news-desk/protest-by-hologram (accessed on 24.4.2015).

62 http://www.hologramasporlalibertad.org (accessed on 24.4.2015)

of april at Fort Greene Park. The tribute to Snowden had been confiscated by the police.[63] As a response *The Illuminator Art Collective* recreated a virtual Snowden bust. The artists projected a line drawing onto emerging smoke. The press coverage of this project did not compare to the global attention for the *Holograms for Freedom* action.[64]

Neither of these projects were holograms, but projections that used smoke or a glass screen (*Pepper's Ghost*) to catch the image. Holograms for Freedom claimed to be 'the first', which is also debatable. However, these are but small details. Both projects are presented to us as projection protest. Both took place in public space, yet they were seen only by few people at the moment of projection. We experience the projections in a mediated form. In case of the Illuminator the documentation was circulated among activist, Holograms for Freedom approached the mainstream international press. Yet, both were powerful interventions and successful in their own way. In comparison, I see one as a clandestine protest the other as a spectacle.

The *Holograms for Freedom* website suggests that *No Somos Delito* have initiated the hologram protest action.[65] However, in an interview, a spokesperson of *No Somos Delito* pointed out that the idea for the project came from 'a group of media professionals' who preferred to remain anonymous, "because they wanted all the attention to be for the platform".[66] The *New Yorker* article of april 20 tells a different story: Javier Urbaneja, a publicist for the advertising agency *DDB*, remembers how the initial idea came to his mind and how he and his colleagues then executed the project. They did technical research and teamed up with a production company. They created a web site and produced the 'holographic' footage, acquired permission to stage and film a projection in front of the Spanish Congress. The event was widely announced – not to Spanish citizens but to the international press. According to *the New Yorker* some 30

63 Anonymous artist installed a bronze statue of whistleblower Edward Snowden at Fort Greene Park onto the Prison Ship Martyrs Monument "as a gift to the city" on the 6th of April 2015 http://www.theguardian.com/us-news/2015/apr/14/edward-snowden-bust-artists-new-york (accessed on 24.4.2015).

64 The Snowden hologram was reported in the New York Times.

65 The website does not refer directly to any other organizers, although the legal document mentions an ambiguous "Promoter".

66 Teti (2015).

Image 13: The Illuminator, 99% Batsignal, New York, 2011. Photo: Brandon Neubauer.

journalists turned up.[67] Photographs of the event can be bought through various image agencies. This was not a surreptitious protest but a well published media spectacle.

On their website *The Illuminator* present themselves as a collective art project. Their mission is to "smash the myths of the information industry and allow people to find out for themselves what the 99% movement is fighting for."[68] The project grew out of *Occupy Wall Street*. They were beaming a 'bat signal' reading 99% during the *Occupy Wall Street* protests. Since 2012 the art collective has staged projection protests all over the world and teamed up with local action groups. Their website archive documents a long practice of protest projections, one of which is the Snowden at Fort Greene Park. The projects are not technically sophisticated, nor does the collective mystify how they work. The *Illuminator* website has a how-to guide for prospective projection activists.[69] They seem to be quite aware of an artistic and activist tradition of projection protest. In an interview Mark Read, one of the artists, mentions Dziga Vertov and *Agit-Train* as well as *Mobile Cinema* of the 60's. Other influences could be the projection interventions addressing the New York housing crisis of the 1980s by Krzysztof Wodiczko or Imi Knoebel's *Projection X* (1971).[70] In contrast to *Holograms for Freedom*, the primary audience of *The Illuminator* appears to be the street protesters, activists and random onlookers. The Illuminator is a tactical media tool which can transform a space, the activist artists call for action and operate as Superheroes.[71]

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67 http://www.newyorker.com/news/news-desk/protest-by-hologram (accessed on 24.4.2015). DDB Worldwide Communications Group Inc. is owned by the Omnicom Group, one of the world largest PR firms who has eminent clients such as the Russian Government. For instance, thinkRUSSIA.com is managed by PR firm Ketchum (owned by Omnicom) on behalf of the Russian Federation.

68 http://theilluminator.org (accessed on 24.4.2015).

69 http://theilluminator.org/tipsheet (accessed on 24.4.2015).

70 http://www.blouinartinfo.com/news/story/761593/occupy-bat-signal-artist-returns-with-occupy-batmobile-codenamed-the-illuminator# (accessed on 24.4.2015). More on Wodiczko see chapter 2, Knoebel see Frieling, Herzogenrath (2006) p. 122.

71 http://theilluminator.org (accessed on 24.4.2015).

Image 14: Agit-train *V.I. Lenin*, Soviet Cinematohraph, Ukraine, 1919.
Image 15: Mobile Cinema, PERA, Ministry of Technology, United Kingdom, 1967.

1. Immersion and Augmentation Two Technical Terms

Image 16: Tony Oursler, *Eyes*, video installation, 1996.

"Rama said, ' ... How can an object of the imagination be real?' Vasistha said, 'The reality of the imagination is only partial; do not take it for something entirely real. What isn't there, isn't there. Yet the true nature of what is seen in a dream or visualized by the imagination exists at all times. Everything exists in a corner of the mind." [72]

Yogàvasistha, 9-12th c. A.D.

72 Doniger O'Flaherty (1986) p. 211.

A few years ago an Indian filmmaker e-mailed me an amazing photograph. The image was taken at dusk and showed an Indian politician giving a speech on a dusty road in front of a small number of onlookers. My friend explained how on first sight there is nothing noteworthy, this is what political campaigns in India tend to look like. Politicians address citizens through rallies, they organize door to door campaigns, road shows, or town square meetings. Occasionally politicians address their voters through television or radio interviews. However, what the image does not immediately reveal is that the politician is only a hologram.[73] On 10 December 2012, Narendra Modi, the chief minister of Gujarat and a member of the far-right Bhartiya Janta Party, gave an unusual speech by beaming his image out as a three-dimensional *avatar* to 53 locations across Gujarat.[74] Modi repeated his holographic

73 The London based company who produced the 3D projections for the Indian election campaign calls their technology 3D holography, which might be misleading as it is a two-dimensional projection onto a glass screen. http://musion.com/ (accessed on 15.2.2016).

74 Journalist Ranjeep Sardesai describes his experience of the holographic rally like this: "I watched one of the 3D shows during the 2012 Gujarat elections from just outside Vadodara. Gujaratis, like most Indians, love their cinema. This was like a political movie being played out in front of them, with Modi as the star. Just the technology which showed Modi appearing with a glow around him was enough to make the crowd feel this was '*paisa vasool*' [value for money, S.E.]. Some members in the audience would move towards the screen, trying to touch Modi, and then scream excitedly when they realized this was only a cinematic image of their leader." Sardesai (2014) e-book. For details on the technology see http://musion.com/?portfolio=narendra-modi-campaign-hologram-2012 (accessed on 15.2.2016).

Image 17: Narendra Modi 3D speech, 2014. Photo: Sanjay Kanojia.

campaign for the 2014 Indian election.[75] Modi won those elections. It is debatable whether or not this was a result of the hologram.

My filmmaker friend described the impact three dimensional projections have in India. He explained that an *avatar* is supposedly an appearance of a deity on earth. The god remains in heaven, the *avatar* is a mere sense of the god who appears on earth.[76] Most common are *avatars* of God Vishnu who will bring *Dharma*, establishing things the way they should be.[77] Perhaps the biggest illusion during the 2014 Indian presidential elections was a smart play on Hindu mythology and a 19th century stage technology called *Pepper's Ghost*.[78] Modi's image was not projected onto an ordinary cinema-screen, he appeared to be standing in front of his audience on stage. *Pepper's Ghost* is a spatial projection using reflection. The projection creates an illusion of a virtual image being actually present in material space.

Imagine this scenario: the next elections in the UK. The conservative candidate is conjured up as a ghost *avatar* in a welding factory in Coventry, the dilapidated seaside resort of Margate and a primary school in South London. An election campaign using a lowbrow stage illusion – it would probably be seen as undermining the candidates' political credibility. To me this scenario appears unthinkable. Yet, why is it hard to picture an optical illusion as appropriate medium for a British prime ministerial candidate, when it has proven so successful in India?[79] Are the Indian campaign audiences easily impressed? The people of a country with the biggest film industry of the world could hardly be media illiterate.

75 For the 2014 general elections of the Indian parliament the BJP declared Modi its Prime Ministerial candidate. Modi again was beamed out as a 3D avatar, this time all over India. With a crew of 2500 members and 125 3D projection units he was beamed to over 1300 locations. Sardesai (2014) e-book.

76 Doniger (2009) p. 201, p. 496.

77 For many Christians and Muslims in India the bitter irony of Modi's appropriation of the avatar for his political campaign is his communal politics and his role in the 2002 Gujarat riots.

78 Pepper's Ghost is a stage technique developed by Henry Dircks and Dr. John Pepper. It was named after Pepper who made the technology widely known through popular science lectures at the London Royal Polytechnic Institute, which he had joined as a lecturer in 1848. http://www.westminster.ac.uk/about-us/our-heritage/timeline (accessed on 4.10.14).

79 On the 26th of January 2015, Turkish prime minister Erdogan followed Modi's example and introduced holography to his election campaign. In Turkey the holographic technology in politics has provoked ridicule. Erdogan's appearance has inspired several satirical responses. One video likens Erdogan to the Wizard of Oz and has ghostbusters catch his avatar: https://www.youtube.com/watch?v=hnHNkiSRG6Y#t=86 (accessed on 23.4.2015). http://www.hurriyetdailynews.com/pm-erdogan-uses-hologram-to-address-izmir-party-members-for-first-time-in-turkey.aspx?pageID=238&nid=61610 (accessed on 23.4.2015).

And again, in Western societies, why do image projections appear to be seen as trivial and mere fantasies?

The two scenarios above, one real and one imagined, point toward the question I like to explore in this chapter: *In what way are projections incorporated and understood in material reality?* In the West, the dominant paradigm in image projection appears to be projection as immersion.[80] This makes sense, when we look at historical developments of projection through the lens of cinema. Often overlooked are those instances where projections are introduced into space, not played onto a distinct screen. In the following, I will look at projection as immersive as well as a way to augment reality. I will use immersion and augmentation as two distinct technical terms denoting projections that are respectively screen based or space based.

As I hope to demonstrate, the perception of projection is historically and culturally specific. With the Enlightenment, the metaphor of the window or frame became the ideal of art appreciation. In the late 17th century a shift was taking place. Illusion and the wondrous were rationalised. The image was a representation of the visible, not magically conjuring up the invisible. I propose that the change in vision during early modernity reverberates a change we are witnessing today: the framed virtual image is being 'un-framed' by mobile computing and layered into our everyday. I wonder whether mobile computing devices make the familiar strange through their augmentations.

Willingly suspending our disbelief

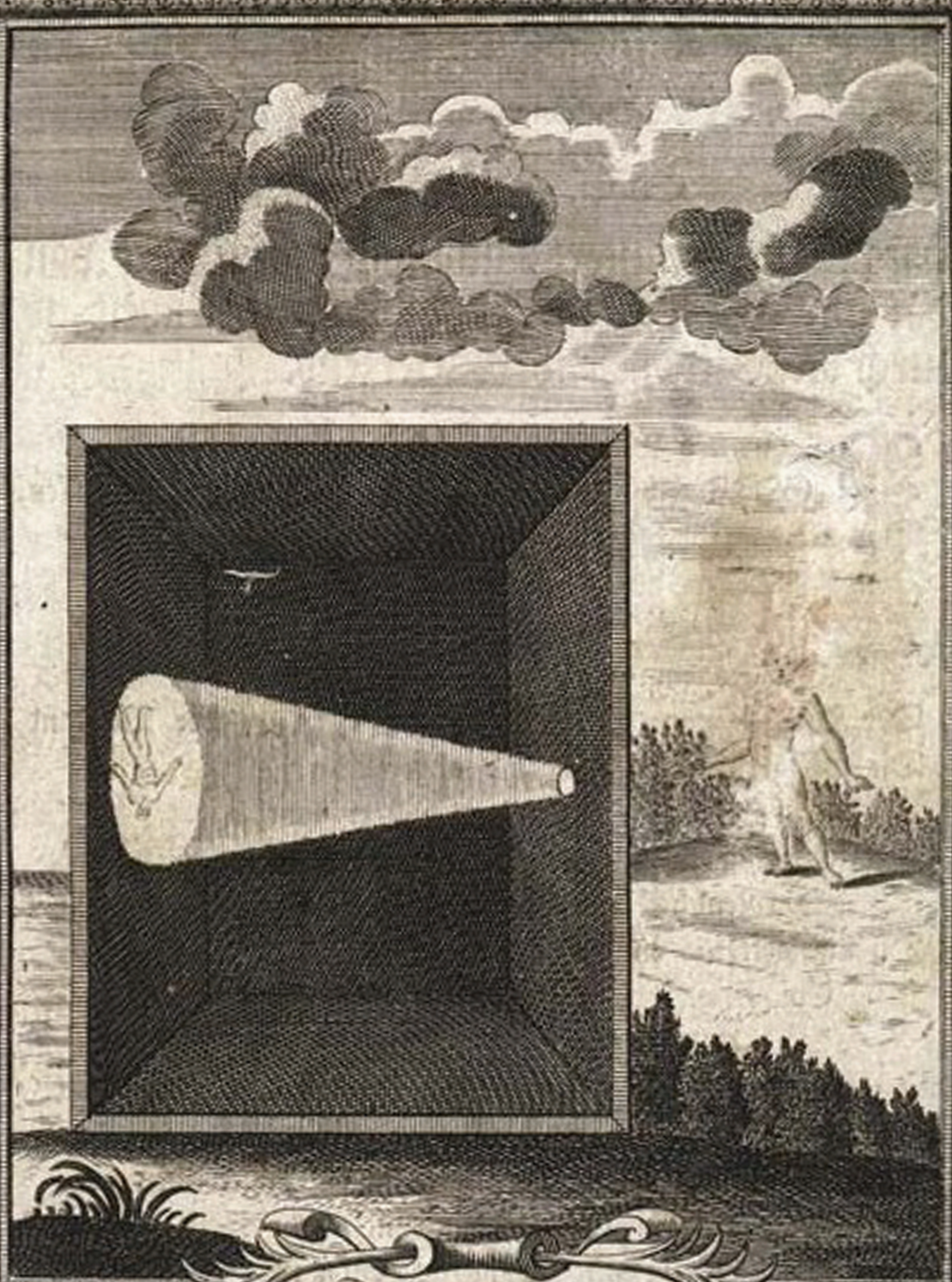
When we go to the cinema, at times we forget for a moment where we are; we immerse ourselves in the projected world. Why is this so? Why do we tend to read projected images as entertaining 'other worlds'? Unlike the so-called holographic projections described above, cinematic screen projections materialize on a well-defined static surface and create what J.R.R. Tolkien called a 'secondary world'.[81] We lose ourselves in the cinema's projected secondary world, but we are deluded when giving it 'primary belief'. Or are we "willingly suspending our disbelief"?[82]

80 Immersion is a transparency of medium, what Bolter and Grusin call '*immediacy*.' They see immediacy as the prevailing 'logic' since the Renaissance. See footnote 18.

81 For Tolkien this secondary world is a purely literary one, because, as he describes in a 1947 article, theatre (and maybe also film) only allowed for a willing suspension of disbelief as a stage trick, and, in his eyes, was always technically wanting. Tolkien (2008) p. 61.

82 Coleridge (1817) p. 267.

Image 18: A moralizing illumination from Johann Arndt, *Das wahre Christentum* (Leipzig, Johann Samuel Heinsius, 1747) p. 6-7.



Verfinstert und
Verkehrt.

At any rate, the dreamlike state seems to rely on a separation between a primary world, our off-screen material 'reality', and a secondary world, the on-screen projected fantasy. Cinema promises to take us beyond the silver-screen into a projected elsewhere. It does so by removing the viewing space as far as possible: soft seats, dimmed lights, loud sound and perplexing technology. Contemporary artists, although not fixing the viewer in a seat, often use a cinematic language. Immersive installations may obscure technology and add screens to surround the viewer.

Art historian Oliver Grau argues that the impact of a projected illusion depends partly on technological innovation and on the media-competence of the viewer.[83] I will return to his argument in chapter 3. At this point, let me tell the story of a legendary film screening, which may throw up some questions. In 1896, the Lumière brothers showed a film of an approaching train at the billiard hall of the Salon Indien du Grand Café in Paris.[84] The novelty is said to have left its audience in terror because of the astonishing visual effect and sense of reality. This occasion has been endlessly retold in films and texts on the advent of cinema.[85] Recent scholarship has disputed the truth of the story. The reports of the 1896 screening may have been a publicity stunt and much later became part of cinema's founding myth.[86] Nevertheless, the fact remains that the Lumière brothers intended, and succeeded, to create a gripping illusion. They worked on three-dimensional technologies and later reshot the scene of the approaching train in stereoscope.[87]



Image 19: *L'Arrivée d'un train en gare de La Ciotat*, dir. Lumière (FR: 1896). Moma Collection, New York.

83 Grau (2003) p. 152.

84 L'Arrivée d'un train en gare de La Ciotat, Lumière (1896).

85 Most recently in Martin Scorsese's homage to Georges Méliès *Hugo* (2011).

86 Loiperdinger, Elzer (2004) p. 94. This assertion does make sense to me. In the late 19th century audiences of the variety theatre were used to colourful and animated magic lantern shows using the latest limelight projectors. I wonder how the flickering blurry black and white film-projections may have compared to this. I suppose the astonishment of moving pictures was much more complex than the shock of overwhelming realism.

87 The exhibition of the 3-D version of the train scene took place in 1935. Zone (2007) e-book, Elsaesser (2013b) p. 882.

It is noteworthy that the same film apparently received a much more muted response in Tokyo. In Japan, early "cinema may not have represented the shock of visualised modernity precisely because it was not yet defined as visual".[88] Film scholar Aaron Gerow argues that the Lumière brothers' film was not read solely in the 'regime of sight' in Japan because of historic and cultural modes of reception.[89] Early cinema audiences were familiar with the '*gentô*' (lantern projections of the *Meiji* period) and '*misemono*' (fairground attractions of the *Edo* period).[90] The tradition of Japanese oral storytelling also played an important role.[91] Up until the 1930s films were translated, explained and commented by a '*benchi*', an orator.[92] This meant that the "[e]arly 'spectator' ... were more often listeners than viewers, enjoying the intimacy of the theatre's space as much as the illusion of the cinematic space."[93] The viewer was not completely immersed into the cinematic space on the screen.[94] These two stories from

Image 20: Scene in which Scorsese recreates the audience response to *L'Arrivée d'un train*. *Hugo*, dir. Martin Scorsese (USA: Paramount Pictures, 2011).

88 Gerow (2010) p. 28.

89 Ibid.

90 *Edo* period (1603–1868), *Meiji* period (1868–1912).

91 Tze-Yue (2010) p. 52, Lamarre (2011) p. 130, Gerow (2010) p. 27 p. 47, p. 133. During the *Meiji* period the projection lantern was re-introduced in Japan. The 'modern' lantern shows, called '*gentô*' in Japan, were popular science talks and used for national education purposes. Unlike the portable wooden '*furô*' (lantern) of the '*utsushi-e*,' the *gentô* projector was a sturdy metal projector.

92 Gerow (2010) p. 141-173.

93 Gerow (2010) p. 147.

94 Gerow (2010) p.139. Reminding the viewer of the performance not being a diegetic world has some similarity to the *V-Effect* (distancing) with which Bertolt Brecht used to break the theatric illusion.

Paris and Japan about the reception of the Lumière brothers' film shed some light on divergent histories of the reception of projection and projection technology, as well as on the myth of the terrified naive viewer and the related desire to achieve an ever greater sense of realism. This so-called realism is part of what film historian Thomas Elsaesser points at as "questionable teleologies said to drive the history of cinema".[95]

As I understand it, the immersive illusion of projection does not necessarily depend on an ever evolving technology and an media illiterate viewer, rather on the *agency* of the viewer, who is inclined to suspend her disbelief and embrace the reality of the projected virtual world. The argument, that we willingly suspend our disbelief when watching image projections, appears to be largely based on the assumption that screen reality exists in exclusive opposition to material reality, and that there is a separation between reality constructed by the projected image and material reality surrounding us. When we enter projected image worlds through doors, frames or windows we seem to leave our material reality behind. We exchange the conscious for the imaginary. And we enter from a realm of belief into a realm of disbelief. Samuel Taylor Coleridge, who coined the term 'willing suspension of disbelief', called it 'poetic faith.'[96] This kind of immersion seems to be the most common approach to image projection in the West, and is largely a product of a definition of material reality as actual space which stands in opposition to illusionary space. Ideas, such as image space as frame, window or door, *poetic faith,* and *willing suspension of disbelief*, bridge the opposites of appearance and material reality. This divide between 'real' and 'virtual' reality originated in the Renaissance framing of vision (i.e. window, door).

The framed viewing field[97]

It is a truism, according to Elsaesser and his colleague Malte Hagener, that "when we see a film, we always cross a border and enter into another world that is different from ours".[98] A metaphor for this 'liminal experience' can be the projection screen

95 Elsaesser (2013a) p. 225.

96 Of course Coleridge was in the early 19th century discussing theatre or the romantic novel rather than projection media and film. Coleridge (1817) p. 267.

97 With respect to the frame, most useful has been the writings of Elsaesser, Grau and Friedberg. On virtuality, how we construct images and how images are in the world see: Mitchell (2005, 1994), Belting (2004), Van Alphen (2005).

98 Elsaesser, Hagener (2010) p. 39.

as such or the door.[99] Early 20th century film theory articulated cinema according to the ontological metaphors of the window or the frame, representing respectively realist or constructivist film theory.[100] According to Elsaesser and Hagener, realist and constructivist film theory both approach film projection as ocular (the viewer has visual access to on-screen events), transitive (a two dimensional projection transforms into three dimensional space beyond the screen) and disembodied (the viewer retreats into the dark space of the auditorium, and material reality is cancelled out). The film historians link the metaphor of window and frame to a humanist understanding of the image, and state that historically the metaphors rely on the "Renaissance ideal of art appreciation – marked by individual immersion and contemplation of the work".[101] Immersive cinematic spaces are constructed according to the rules of perspective.

The perspectival representation renders the screen 'transparent' and lets us focus on the other world that is projected, as art critic Janneke Wesseling points out in her book on reception aesthetics.[102] This is only partly true, as she continues to show. It is our perspective as subjective viewer as well as the representation (painting, film) as image *and* object that condition the viewing experience.[103] The images materialize by way of a medium (monitor, canvas, screen), the projected images themselves are the 'presence of an absence'.[104] Art historian Hans Belting articulates this dualism of inside and outside as: "The framed viewing field, which was to be inherited by the TV screen and beyond, first relied on a most specific window architecture, which developed in the European middle ages, and second, *on a corresponding European mentality eager to control the world via a tele-view from*

99 Ibid.

100 Constructivist film theorists included Béla Balázs and Rudolph Arnheimer, Realist film theorist with a phenomenological outlook included Siegfried Kracauer and André Bazin. Elsaesser, Hagener (2010) p. 14.

101 They continue to show how this reference to Renaissance art appreciation was to elevate film into the realms of established arts, away from early associations of film with 'collective and distracted' fairground pleasures. Elsaesser, Hagener (2010) p. 16.

102 Wesseling (2014).

103 Ibid.

104 Belting (2004) p.54. Art historian Hans Belting defines for us "[T]he factual presence and visibility of images rely on their transmission by a given medium in which they appear or are performed, whether they turn up on a monitor or are embodied in an old statue. In their own name, images successfully testify to the absence of what they make present." Belting (2004) p.55.

within, meaning from a position apart (a dualism separating inside and outside, subject and world). [Italics SE]"[105] The window view answered an Enlightenment desire for framing and dominating the world. Historian Stuart Clark points out how "[d]uring the early modern period ... vision was anything but objectively established".[106] The change came with the Enlightenment, when the image became a record of the visible rather than conjuring up the invisible; paintings were specimens of the material world to be studied. 17th century Dutch painting used methods of perspective and newly developed optical tools in their '*knowledge production*'.[107] The camera obscura, precursor to the photographic camera, was an ideal tool to register, copy, or fixate the image of projected reality.[108] The single lens camera, which has come to dominate visual representation, reinforces the framed view and central perspective. According to art historian Svetlana Alpers, realism "was celebrated as giving basic access to knowledge and understanding of the world".[109] Knowledge would 'dispel myths' and 'overthrow fantasy'. And "the mind, conquering superstition, [was] to rule over disenchanted nature."[110] This form of 'knowledge production' was an attempt to create a consensus on visual reality. From the point of view of power, it might appear attractive to control what is acceptable sight and what is considered visual error. The project of Enlightenment was aimed at dominating perception. This attitude towards the visible would impact conditions of society. Art historian Ernst Gombrich raised the question whether all cultures feel the need to 'iron out' the contradiction between 'reality' and 'appearance'.[111] And, we may extend this question by asking, which imaging concepts may be alternatives to the framed viewing field? One such concept that offers a mixing of reality with the virtual is augmentation.

105 Belting (2004) p. 53.

106 Clark (2007) p. 1.

107 To refer to Panofsky, use of perspective resulted in an objectification of the subjective. See chapter 3.

108 Whether or not Dutch artists have been using optical tools has been the subject of much debate. Alpers as well as David Hockney have brought on convincing evidence that they did. Hockney (2001), Alpers (1984) p. 74.

109 Alpers (1984) p. 72-73.

110 Adorno, Horkheimer (2002) p. 1-2.

111 I found this quote in Wendy Doniger's book on illusion in stories and myths: Doniger O'Flaherty (1986) p. 11.

Augmented reality

To augment means to increase, extend or expand. Augmented Reality (AR) is an enlarged reality where material surroundings are expanded by virtual (projected) information. The term Augmented Reality was coined in the 1990s by computer scientist Tom Caudell, then working for Boeing.[112] Computer scientists Julie Carmigniani and Borko Furht define AR as "a real-time direct or indirect view of a physical real-world environment that has been enhanced/augmented by adding virtual computer-generated information to it."[113] It is a 'mixed reality'.[114] In this mixed reality projected beliefs (imagined or remembered) are not positioned in opposition to material reality. *Instead of juxtaposing a realm of belief to a realm of disbelief, as with immersion, we experience a heightened sense of belief.* When we look at augmenting image projection, we do not experience an immersion into an absent image world, rather we become aware of that which is imagined or remembered in the context of that what is present. The projected image is inserted as a possibility into a social situation.

Augmentations take place *in conjunction with* material reality, trying to appear *in* reality, yet like any projection the virtual images need a screen to manifest themselves. AR, as an interactive mixed reality, relies on gadgets such as a smart phone or tablet, head mounted display, or media goggle. Computer generated images are projected over our field of vision, letting us see material and virtual reality at the same time. In combination with GPS, wifi and orientation applications the augmenting information can relate instantaneously to the place we are at. AR may have a future in urban advertising, gaming and new applications of social networking.[115] In museum display, AR can enhance viewing experiences, add a tactile dimension, and give intuitive access to information. To give an example, Museum Boijmans Van Beuningen in Rotterdam collaborated with artist Joachim Rotteveel and the Royal

112 Carmigniani, Furht (2011) p.4.

113 Carmigniani and Furht (2011) p. 3.

114 Mixed reality is defined by communication researcher Fumio Kishino and engineer Paul Milgram as bringing together real and virtual worlds. This could be augmentation of reality or also augmentation of virtuality. They say "the most straightforward way to view a Mixed Reality environment, therefore, is one in which real world and virtual world objects are presented together within a single display, that is, anywhere between the extrema of the virtuality continuum." See Milgram, Kishino (1994).

115 Schmalstieg et al. (2011) p. 13-38.

Academy of Art The Hague on an exhibition of medieval pottery.[116] By handling plain white reproductions of pottery shards the visitors could see a virtual object moving simultaneous on a screen where the missing pieces were revealed.[117]

AR can be useful in diagnostics, in medicine and mechanics alike. And heads-up displays will project your car navigator onto the windshield so you can keep your eyes on the road. These technologies are offshoots of AR developed for the military. Combat soldiers deal with an information overload, yet they have to make on-the-spot decisions. AR based complex situational awareness systems will improve 'combat efficiency'. Not only on the ground; the 'super cockpit' developed in the late 1960s used AR.[118] The heads-up system superimposed information onto the field of vision of the pilot, "leaving the pilot to mentally merge the virtual map with his visual field".[119] AR is also being tested in policing for instant

Image 21: Joachim Rotteveel, *Sgraffito in 3D* (2009).
Image 22: Head-up system in a Eurofighter.

116 Sgraffito in 3D, 25 October 2008 - 4 January 2009, Museum Boijmans Van Beuningen, Rotterdam.

117 Kolstee et al. (2009) p.12. Also see http://www.sgraffito-in-3d.com (accessed on 21.2.2014).

118 Livingston et al. (2011) p. 634.

119 Livingston et al. (2011) p. 677.

identification, by using biometric and voice recognition, and enhanced vision (even through walls) using infrared and thermal imaging.[120]

The above examples of augmentation all depend on viewing gadgets and computer generated information. Information-, reconnaissance- and identification-technologies are incorporating AR. The ultimate aim of AR technology is a system in which virtual and actual become indistinguishable.[121] The technological developments ostensibly introduce augmentation as a new method of visual communication. Projections that augment space may have had a marginal presence in art and visual culture, but expanding space with virtual images has a long history, as I will illustrate in the coming chapters. The developments in AR introduce new technical tools that are also of interest to artists. Besides technical innovation, AR technologies change our sense of reality and space. Elsaesser speaks of a resetting of our ideas on images taking place. In this 'cultural shift' "our sense of spatial and temporal orientation and our embodied relation to data-rich simulated environments" is changing.[122] We used to experience projections framed on a screen. These projections were not experienced as magic, but involve the viewer who was willingly suspending his disbelief. We may observe a shift in today's experience of the virtual. Efforts are made to 'un-frame' the virtual image through mobile computing. Mobile devices augment the everyday world by layering information into the space surrounding us.

Virtual augmentations do not require us to suspend our disbelief. Rather, I suggest, augmentations could be *analogical demonstrations,* magical symbols visualising the invisible and hidden. Virtual images are not necessarily purpose in themselves, they can be interfaces or 'portals' to other images or information and invite action.[123] We experience a 'mixing of reality' of the physical and virtual. New technologies enrich and simplify our lives. On the downside of it, augmentation technologies seem to *sell and betray us*; they bring about a surveillance and commodification of our everyday movements.

In opposition to this, augmenting projections have the potential to engage or to interfere directly with the world that surrounds us by 'making strange'. Ernst Bloch suggests that "strangeness that does not betray and sell us has a wholly different effect.

120 Cowper, Buerger (2003).

121 Transparent immediacy. Bolter and Grusin (2000) p. 30.

122 Elsaesser (2013a) p. 221.

123 Elsaesser (2013a) p. 241.

It makes the beholder look up".[124] The projected image as a 'stranger' can bring about recognition.[125] To me as an artist projection as a 'stranger' is an attractive thought. Instead of creating a separate reality with a logic of its own, a projection interjected into the world can say something about that world using a *parallel image*. The concepts of 'magical symbols', 'analogical demonstrations' and 'making strange' need some explanation.

Magical symbols

The answer to Gombrich's earlier mentioned question on inconsistency of perception is evasion. He said: "[e]ven in our rationalist culture we don't often live up to this [radical distinction between appearance and reality] ... We try to evade it, especially when our emotions are involved."[126] Although, imaging concepts alternative to the framed viewing field of Enlightenment existed, they were meant for 'simple minds': projectionist and aeronaut Étienne-Gaspard Robertson writes how children, unlettered people and villagers may still believe in magic and the devil during the late 18th century.[127] When vision was framed during early modernity, imagination and illusion were discredited as charlatanism or the lowly entertainment of a 'gypsy beauty' from the fairground.[128] Historian Koen Vermeir describes a shift that took place in the meaning of illusion and the wondrous.[129] In the late 17th century opposition to illusion increased, because it was holding up progress. Vermeir explains that the perceived problem with magic was the thin line between *delusion* and *allusion.*[130] For instance, Catholic theology was based on illusional transformations

124 Bloch (1970a) p.123.

125 "[T]he beholder achieves insight by means of the estrangement-effect which can turn into its dialectical opposite-the recognition, or 'Aha!' experience". Bloch (1970a) p.124.

126 Doniger O'Flaherty (1995) p. 28.

127 Robertson (1831) p.143-149.

128 "Such an alternative genealogy, tracing lines of descent of monocular cinema's illegitimate brother, the camera obscura, but blood-related to the gypsy beauty from the fairground and the itinerant magic lanternist". Elsaesser (2013a) p. 234

129 His essay on the magic of the magic lantern demonstrates how a Jesuit scholarly text (Kircher's *Ars Magna*), if read symbolically, reveals a catholic order, or philosophy, rather than verifiable demonstrations in physics. Kircher himself addresses the reader to this effect by comparing the ten chapters of the book to the ten Sephiroth of the Kaballah, the Kaballistic cosmology, basically comparing his book with a revelation of a divine order. Vermeir (2005) p. 138.

130 On magic see also chapter 5.

(transubstantiation of water into wine, divine providence, miracles) and relied on beliefs in the supernatural. Vermeir writes, the Catholic "worldview [was] based on the invisible beneath the visible".[131] The church would use artifices such as the magic lantern projector to show the invisible as an analogy.[132] With the magic lantern Jesuits could visualize inner images to lay people by simplifying and mechanising the spiritual and psychedelic exercises performed in cloisters.[133]

The idea of visualising the invisible as an *analogy* seems to me an apt concept when looking at the experiences projections can generate. That what is invisible or not present is projected as a parallel image, which could be read as metaphor. The parallel image could also be a substitute, like in a mirror box. (A mirror box is used in clinical medicine to treat amputee patients' phantom limb pain. The missing limb is simulated in a reflection.) Vermeir coined the term *analogical demonstration* which is a magical symbol visualising invisible and hidden processes in nature. He defines it as "a physical (instead of mathematical) demonstration of something invisible, something indemonstrable in a direct way".[134] In a pre-modern world full of inexplicable supernatural and miraculous

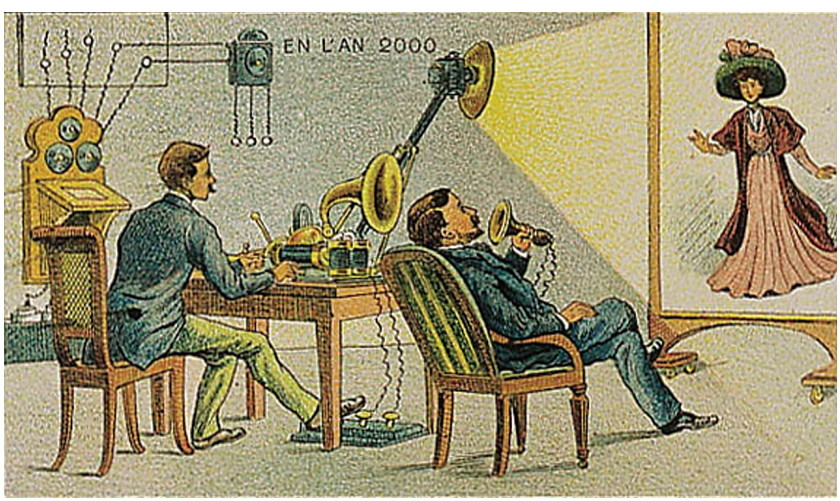


Image 23: Villemard, 'En l'An 2000', Correspondance Cinéma-Phono-Télégraphique, cigar box inserts, Chromolithographie, 1910, Paris. Bibliothèque nationale de France.

131 Vermeir (2005) p. 155.

132 Jesuit theatre. See Vermeir (2003) p.2.

133 Kittler (2010) p. 79.

134 Vermeir (2005) p. 156.

phenomena a magical symbol could visualize the invisible. Vermeir claims that *magic lantern* projections, in a baroque sensibility, were seen as *magical symbols*.[135] The *magic lantern* was a projection machine that became a popular form of entertainment in the late 17th century. The lantern could *show* and *explain* at the same time. The lantern was a counter-model to enlightened objectivity and rational progress that aspired to dominate nature.[136] Psychophysiological space – in-homogenous experience of space – extended with 'analogical demonstrations' might create an experience of 'magical space'.[137]

Making strange

The author Victor Shklovsky understood art as a technique to produce awareness. He coined the concept of '*ostranenie*' (making strange in Russian) and stated that "[t]he technique of art is to make objects 'unfamiliar' to make forms difficult".[138] Bertolt Brecht might have been familiar with Shklovsky's 1916 article *Art as Technique*. Bertolt Brecht elaborated on the idea of *ostranenie* and used '*Verfremdung*' to expose '*Entfremdung*'.[139] Brecht intended to shake the viewer and expose the "condition of diversionary and stultifying alienation" they find themselves in.[140] *Verfremdung* is a term used by Bertolt Brecht in his theory of *epic theatre. Epic theatre,* according to Brecht, distinguishes itself from classical theatre (Aristotelian theatre) through forms of distancing. Aristotelian theatre induces immersive amusement, *epic theatre,* on the other hand, is inviting a critical point of view.[141] Brecht calls this the *V-Effect*, V is short for *Verfremdung*.[142] He says: "The V-effect consists in turning the object of which we are to be made aware, to which our attention is to be drawn,

135 Analogical demonstration or a metaphysical symbol. Vermeir (2005) p. 150-152, 158.

136 Vermeir (2005) p. 158. "[Cassirer] defines the symbol "in which something 'sensuous' (ein Sinnliches) is represented as a particular embodiment of 'sense' (Bedeutung/ meaning)." Neher (2005) p. 360. Compare footnote 245.

137 To recall Panofsky: *perceived space* is represented either as *logical form* or *visually symbolised,* either as geometrical space or a symbolic space. Panofsky (1927/ 2002) p. 66/ p. 31.

138 Shklovsky (2006) p. 778.

139 Bloch (1970a) p. 125.

140 Bloch (1970a) p. 121.

141 The distinction of the epic, producing distance, and the dramatic, immersing in immediacy, go back to the discussion between Schiller and Goethe. See Safranski (2005) p. 432-3.

142 Brecht (1963) p. 182-183.

from something ordinary, familiar, immediately accessible, into something peculiar, striking and unexpected."[143]

Verfremdung and *Entfremdung* are words without a perfect match in English, also *ostranenie* is apparently difficult to translate.[144] Key ingredient is the word 'strange' or alien. Bloch explains "[a]lienation, estrangement: the terms are bound together by the alien, the external; yet in them evil and beneficient [sic] modes of experience can be distinguished in specific, very particular ways."[145] The evil mode: alienation from ourselves in our commodified lives. The beneficent mode: distant strangeness which can evoke surprise and "makes the beholder look up".[146] I see augmentation as a technique in art to 'make strange' and create a distance, that can be either pleasant or unsettling. The technique of distancing is far from new, but is an essential method in art making. It lets us imagine things differently. Augmenting projections are persuasive, not because they are materially 'real', rather because they make visible what we could *imagine* as real.

Image 24: Krzysztof Wodiczko, *The Tijuana Projection*, Public projection at the Centro Cultural de Tijuana, Mexico (2001).

143 Brecht (2014) p. 192.

144 Berlina (2016) p. 14.

145 Bloch (1970a) p. 121.

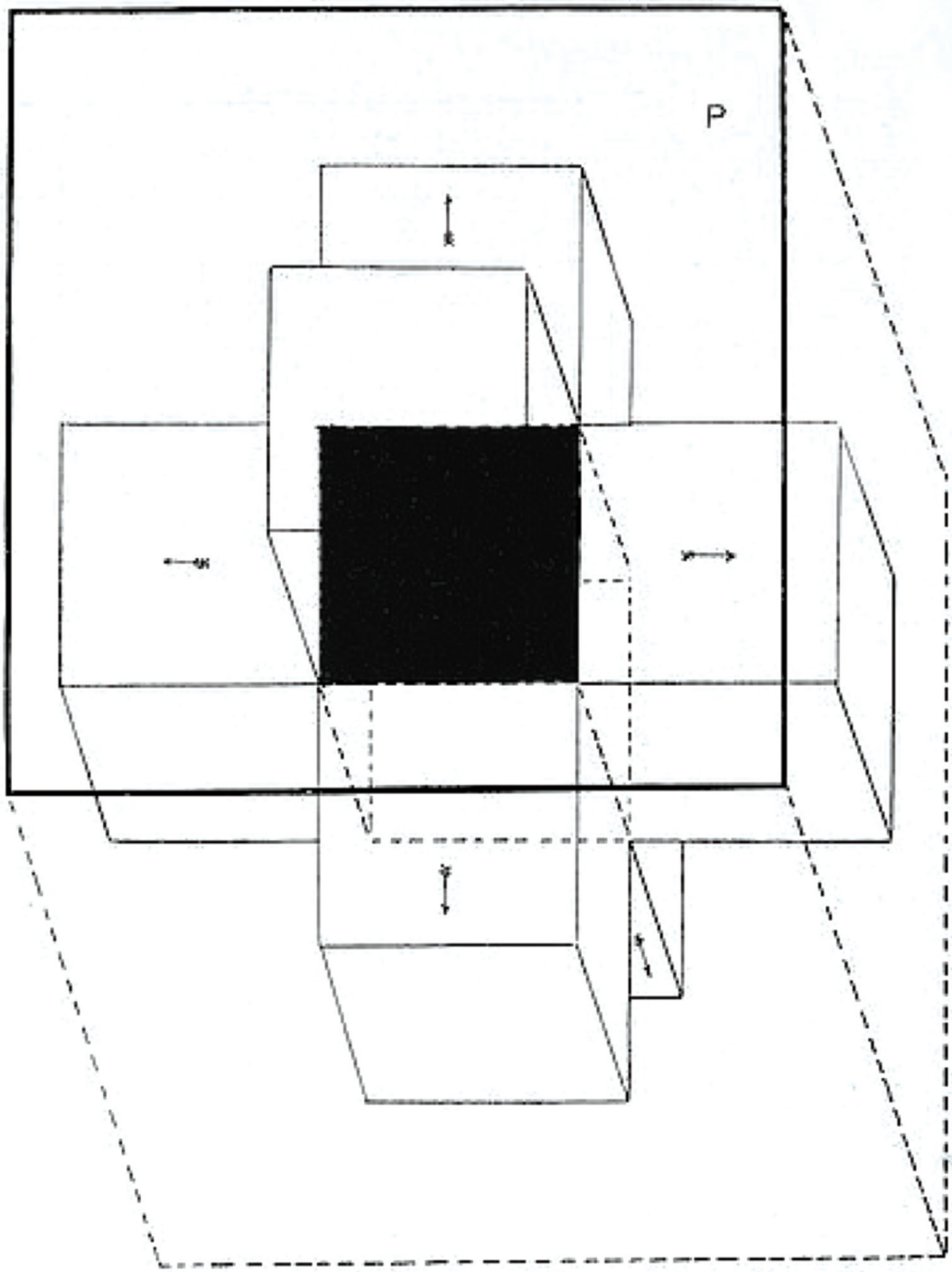
146 Bloch (1970a) p. 123.

To summarise: I argue, since Enlightenment projections have been understood as framed illusions. We tend to experience projected films immersed into an absent image world. We suspend our disbelief when looking at projections; we are giving primary belief to the projection although we know it to be untrue. We embrace illusions as separate from physical reality, out of a tradition of image reception where we are framing a projected other world. Enlightenment established vision 'objectively' and, hence, the projected 'other worlds' provoked 'poetic faith' in us as viewers. The introduction of the single lens camera reinforced the framed view and central perspective.

Projection is not always and everywhere understood solely in the regime of objective sight; illusions have been accepted also as true without proof. The example of Modi's political campaign shows how in India the projected avatar can be understood as a symbol of (godly) power. In Europe, humanist knowledge systems were countered by those using projection-magic: for instance the Jesuit theatre and, on the bottom of the ladder, the showmen at fairs and the vaudeville. Although the dominant paradigm of projection in the West has for the last two centuries been immersion, our relation to image projection is changing. Today augmented reality is entering our everyday experience with mobile computing technology. Images are becoming interfaces and access points in *data-rich simulated environments*. The technologies are new, augmenting as such not.

I distinguish between *magical-* and *critical-augmentations*. In my artistic praxis I observe how by projecting an image onto an object, this object is augmented and gains a different reality. Projections are short lived. However, how we see an object has little to do with its permanence, more with what we think possible. Critical augmentations can enlarge an object's possibilities.

The history of projection technology is often told with cinema as the happy ending. However, throughout its history there have also been experiments with projection machines *augmenting* reality, which I will study in more detail in chapter 4. Augmentation promises to become a new paradigm with a wide field of application. As a projection method it can be used to inform, it can be misused to track our movements or commodify the world that surrounds us. (Think of navigation or AR apps incorporating pre-selected information and advertisement based on interest, web surfing habits, and location.) Alternatively augmentation could describe a tool in political activism and art which critically engages us by making the familiar look strange, for instance *The Illuminator* (insert 1). In the next chapter I turn to how immersion and augmentation are applied in contemporary art.


P

Light ARCHITECTURE:

Theo van Doesburg and László Moholy-Nagy

In an 1929 essay for the magazine *Die Form*, Theo van Doesburg reviewed the state of film as an artistic medium. His main point of critique was that, although film was used effectively for its illusionist qualities and avant-garde film had developed something like an optical poetry, the medium had not yet been used to its fullest potential. In his words: "the projection-screen has been seen as canvas until now, even as a canvas limited by a frame. One should finally discover the light-space, the film-continuum. The technical attempt to give shape to the time dimension in film, a dimension which is missing in static images, failed. The origin of this failure is the consideration of the projection surface as a painterly canvas." "Instead of a painterly approach, an architectural attitude will be necessary. Because the newly mastered material will enable a new *architecture of light* and can produce quite unexpected dimensions."[147] Film operated only within the strict frame of the projection screen, whereas Van Doesburg called for breaking open the surface of the screen, in order to explore the true depth of the projection; light – movement – space – time – shadow are the basic components of *dynamic light architecture*.

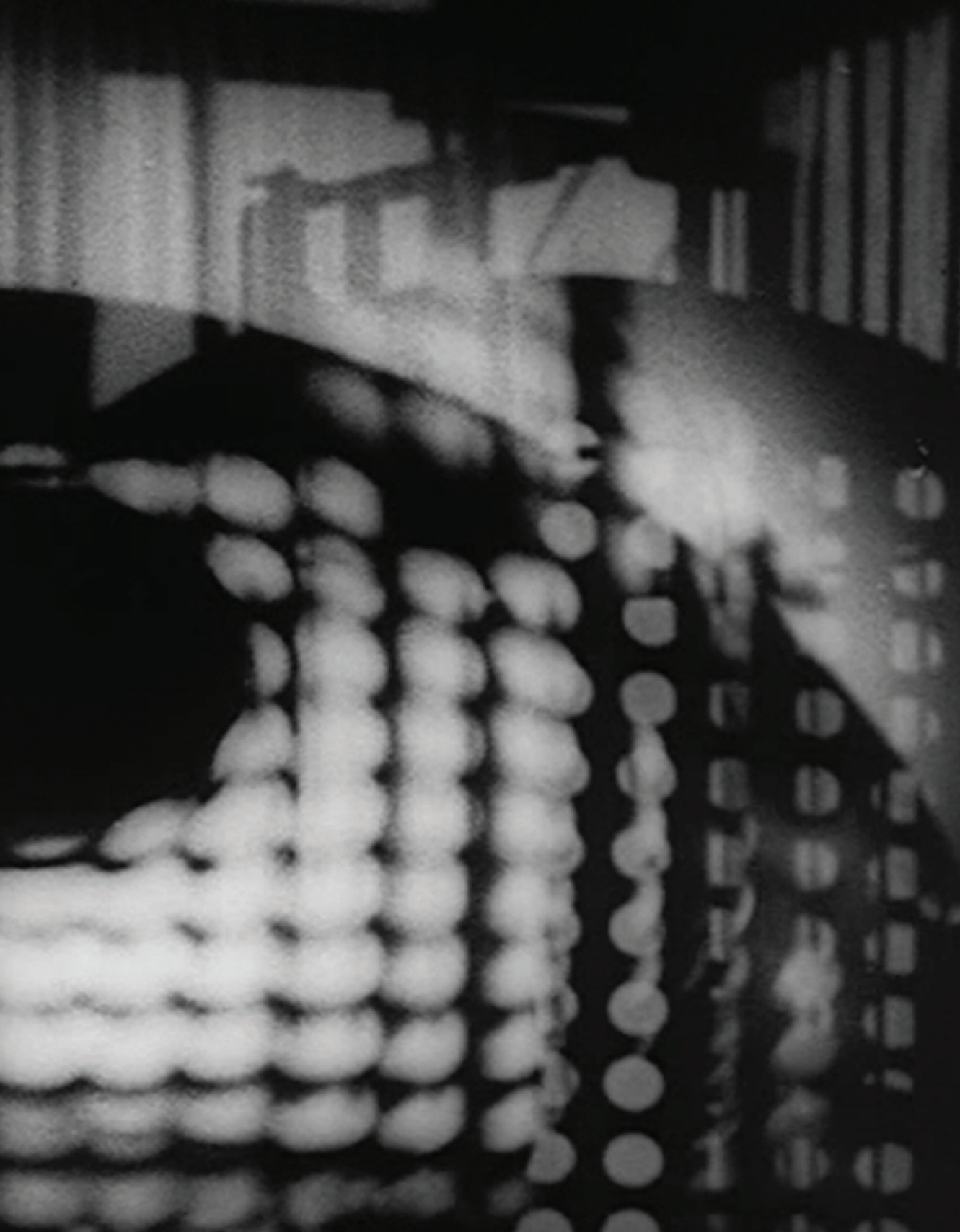
A diagram accompanying the article visualises the *fields of projection* in relation to the conventional projection screen. To me the reference to architecture is significant. The projection is to be 'built' into space, the viewer will not view the film from a remote position, but rather experience it physically, which, according to van Doesburg, does not imply illusion.[148] Van Doesburg does not give any examples of this new film-architecture. His ideas may have been fuelled by a projector László Moholy-Nagy developed around the same time. Moholy-Nagy saw the *light-prop* or *Lichtrequisit einer elektrischen Buehne* (1922-1930) as an attempt in design light architecture: "The light-prop could prompt numerous optical findings, and it seems appropriate to pursue these experiments as planned, leading to light and motion design."[149]

Image 25: Theo van Doesburg, *Film als reine Gestaltung*, (1929).

147 (Translation S.E.) van Doesburg (1929) p. 248.

148 Ibid.

149 (Translation S.E.) Moholy-Nagy (1930) p. 157.



Moholy-Nagy had extensively studied the possibilities of creation with light and movement in photography, film, and sculpture. He dreamt of a projection tool which could create visions on unusual screens such as clouds and fog in the air. When the light-space-modulator was turned on for the first time, Moholy-Nagy felt like a 'sorcerer's' apprentice.[150] He wrote: "The mobile was so startling in its coordinated motion and space articulation of light and shadow sequences that I almost believed in magic."[151] By evoking Goethe's *Zauberlehrling*, did Moholy-Nagy gesture to the possibilities as well as the possible failure he saw in the experiment? The archive at the van Abbe museum gives a glimpse of insight. Correspondence from 1971 between the museum director Jean Leering and Moholy-Nagy's Daughter Lucia suggests that Moholy-Nagy predated the work. Lucia Moholy writes in a letter to Jean Leering, 21 june 1971 "..." ... from today's perspective, I am of the opinion that the onset of the realisation could not be before 1928".[152] This may explain why van Doesburg did not mention the light-space-modulator in his 1929 text. And why did Moholy-Nagy predate the work? We can only speculate. Journalist Nan Rosenthal, in an unpublished paper of 1969, gives an idea of the technical and financial hurdles that eventually may have made Moholy-Nagy give up on one of his most spectacular projects.[153]

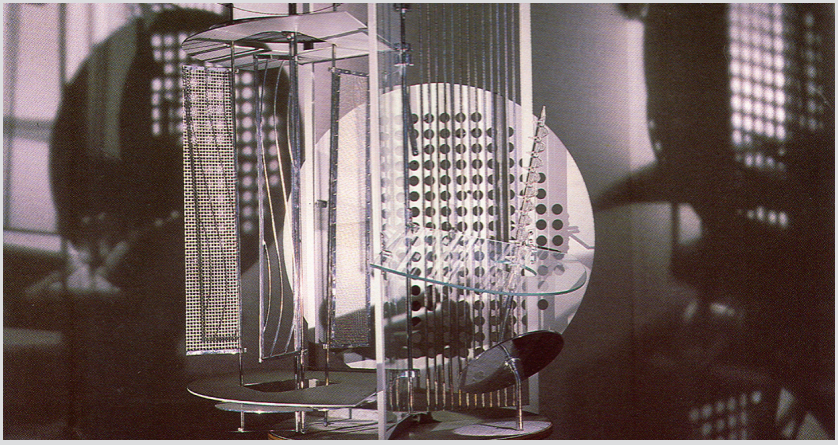


Image 26: László Moholy-Nagy, *From Ein Lichtspiel Schwarz Weiss Grau*, Film, 1930.
Image 27: László Moholy-Nagy, *Lichtrequisit einer elektrischen Buehne* (1922-1930).

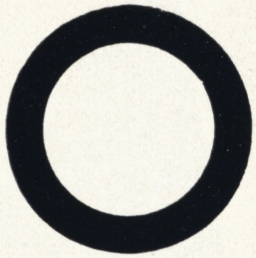
150 „Die ich rief, die Geister, Werd' ich nun nicht los" is one of the the most quoted lines from *Der Zauberlehrling,* Johann Wolfgang von Goethe, 1827.

151 Kaplan (1995) p. 158/159.

152 (Translation S.E.) Archive van Abbe Museum, Eindhoven.

153 Archive van Abbe Museum, Eindhoven.

Verarbeitung des Mülls in Fabrikbetrieb.
Berge von verrosteten Schrauben, Büchsen, Schuhen usw.
PATERNOSTER-Aufzug mit Aussicht bis ans Ende und zurück. Im Kreis.



Der ganze Film wird von hier (verkürzt) RÜCKWÄRTS gedreht bis zu der JaZZ-BAND (auch diese umgekehrt)

von **FORTISSIMO-o-O**

bis **PIANISSIMO**

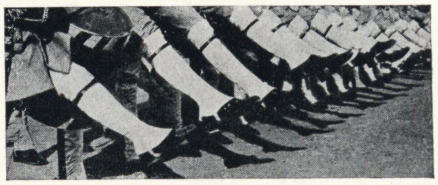


Militärparade

Glas Wasser.
Leichenschau (Morgue) von oben.

RECHTS-RECHTS
RECHTS-RECHTS

MARSCH-MARSCH-
MARSCH-MARSCH-RECHTS



REITDAMEN - LINKS
Die beiden Aufnahmen übereinander kopiert, durchscheinend.

LINKS-LINKS-LINKS

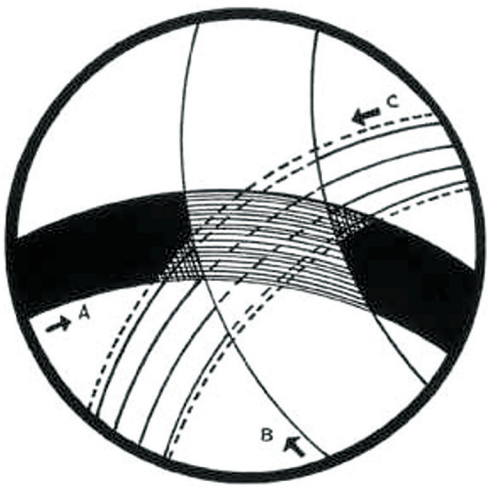
2. Image Projection in Contemporary Art
Almost Realities and Expanded Reality

Filmmaking is still dependent on the tradition of the panel painting, and film-praxis shows little of the fact that in film the material is light, not pigment, and that film should push for mobile spatial projection, instead, as happens today, projecting animated "stills" onto a flat surface."[154]

László Moholy-Nagy, 1932

Image 28: Moholy-Nagy, *Dynamik der Gross-Stadt*, film script, 1927.

154 (Translation S.E.) Moholy-Nagy (1932) p. 155.



In 1927 Moholy-Nagy published a drawing of the *Poly-cinema*.[155] He sketched simultaneous moving projections floating in space. What he seems to have imagined was a layered cinematic experience in the gallery. As museum visitors we have grown quite used to dark galleries displaying projections. However, these *black boxes* rarely have the layered complexity Moholy described in his book, they tend to become quasi cinemas: in a dark room one or two large projections are 'beamed' onto one end, and seating is arranged at the other. A film is projected in a loop or at announced times. As practitioner I am often faced with the black box as a standard setup. In the recent past, on several occasions I have been invited by curators to install my work in such a black box.[156] The exhibitions were designed as a series of dark booths.[157] Sometimes however, curators go along with the request of artists for a cinematic setup.[158] These display choices may have practical reasons: the museum architecture, to prevent sound- and light-spill or other distractions of the surroundings. By and large, the black boxes work best for cinematic projections. And I agree with artist Catherine Elwes when she says these black box installations rarely do better than a screening at the cinema, as it often matters little from which position in the gallery we look at the projection on the wall. She repeats Moholy-Nagy's observation that the cinemascope illusionism is merely an 'electronic mural painting' and fails to affect space.[159]

Projections were introduced to the gallery in the 1960s when artists aimed at exposing the workings of mass media illusionism. The dominant art-historic narrative

155 Moholy-Nagy (1967) p.41.

156 The black box is a darkened exhibition room and can be seen in opposition to the 'white cube' gallery.

157 Sharjah Biennial 9, *Provisions*, Sharjah, UAE, Asia Triennial Manchester, Imperial War Museum, Manchester, UK, *Our Land / Alien Territory*, special program of the 6th Moscow Biennale of Contemporary Art, Manege, Moscow, RU.

158 For instance, *Lines of Control*, Johnson Museum of Art, Ithaca and Nasher Museum, Duke University, USA.

159 Elwes (2005) p. 153.

Image 29: László Moholy-Nagy, *Poly-cinema*, in Malerei, Fotografie Film, 1927.

says that early media art had a phenomenological approach and *dismantled* or *stripped away* the elements of the projection mechanisms offering an analytical distanced form of viewing. By bringing the cinematic experience into the gallery, film or video installations favoured a conscious experience of the structures of projective illusionism.[160]

Alternative to this analytical mode, one could look at early media installations as a *layering of space* creating an augmented viewing experience. Every contemporary art project has a particular notion of space; a layering of space happens when projected space merges with material space. This comes close to the principles assigned to *Expanded Cinema*, a field of projection art that has, for a long time, been neglected in art history.[161] Expanded Cinema is an fuzzy term for various experiments with projection and is often linked to the conceptual art practices of the 1960s and 1970s.[162] There is a strong similitude to the above mentioned *Poly-cinema* and other synaesthetic concepts of the 1920s.

In this chapter, I want to look at contemporary projection art and its art historic renderings. Undoubtedly, cinema and the cinematic play an important role in the practice and theory of projection art.[163] However, my curiosity is aroused by works that abandon the division of space into on- and off-screen, and instead attempt a mixing of realities. I will look at projection art from the perspective of an expanded projection practice. I make the distinction between a *stripping away* or a *layering* of projection into space, thus highlighting those works or aspects of works that blur the separation between the reality of the material space and the illusionary space common in traditional cinematic projections. I find some evidence of this in Moholy-Nagy's experiments with projection as well as in certain works of Expanded Cinema. I will conclude the chapter with for me one of the most convincing mixed reality practices, that of Krzysztof Wodiczko.

160 Iles (2000).

161 Some recent publications that engage this omission are Leighton (2008), Rees (2011), Uroskie (2014), Sutton (2015) and Hatfield (2006).

162 Often cited in relation to Expanded Cinema is the text of Gene Youngblood of the same name. Youngblood (1970).

163 The relation to cinema was highlighted in exhibitions such as: '*Expanded Cinema*', Eye, Amsterdam, 2012, '*The Cinema Effect*', Hirshhorn Museum, Washington, 2008, '*Beyond Cinema*', Hamburger Bahnhof, Berlin, 2007, *'cinéma cinéma'*, Van Abbemuseum, Eindhoven, 1999, and publications like: Eamon, Bal, Colomina (2009), Trodd (2011), Balsom (2013). Emphasis on the technical development of the medium and technological developement: Meigh-Andrews (2014), Spielmann (2005). A recent publication by Helen Westgeest gives an exhaustive overview of the different strands in video art theory. Westgeest (2015).

According to curator Chrissie Iles, projective installations underwent three phases.[164] Firstly, a *phenomenological phase* in the 1960s to 1970s, which brought the black box of the cinema into the gallery. She observes how "[b]uilding on minimalism's phenomenological approach, the darkened gallery's space invites participation, movement, the sharing of multiple viewpoints, the *dismantling* of the single frontal screen, and an analytical distanced form of viewing. The spectator's attention turns from the illusion on the screen to the surrounding space, and to the physical mechanism and properties of the moving image" [italics S.E.].[165] Artists challenged the static viewing perspectives of the cinema hall and stripped away the illusionism of the screen, the structure of the film frame, the physical mechanisms of projection, and the relation between the screen and its surrounding space. The viewer was given an active role, which Iles calls 'a wakeful state of perception'.[166] She illustrates this phase with the film and video works by artists such as Dan Graham, Michael Snow or Bruce Nauman.

Secondly, Iles mentions a *sculptural phase* of the 1980s, which she does not include in her study. The term video-sculpture emerged in the 1980s and is generally referring to sculptures in which TV monitors are incorporated.[167] Catherine Elwes claims "that a video displayed on a monitor is

164 Iles (2000) p. 252.

165 Iles (2001) p. 33.

166 Iles (2001) p. 33-34.

167 Exhibitions like 'The Luminous Image', Stedelijk Museum 1984 or 'Video-Skulptur', Kunstverein Köln, 1989 mainly showed video-installations and video-sculptures using monitors.

Image 30: Bruce Nauman, *Live-Taped Video Corridor*, 1970.
Image 31: Nam June Paik *Dog*, Video sculpture, laser disc player, 1995.

already and always a sculpture".[168] The objectness of the TV monitor is a given, but I do not agree that it makes the video image sculptural by default. The TV became an (often awkward) unit displaying a moving image frame in space. In an exhibition catalogue from 1989, curators Wulf Herzogenrath and Edith Decker observed a boom of video-sculpture, -objects and -installations, which, according to them, started in the 1960s when artists critically interrogated the mass-medium television. Works by artists such as Marie Jo Lafontaine, Ulrike Rosenbach, Stansfield/Hooykaas, Nan Hoover, Wolf Vostel, and Nam June Paik come to mind. The term sculpture, so Herzogenrath and Decker in the introduction to their book on video-sculpture, would also include those works that incorporate video technology into an autonomous sculptural form. They did not see the necessity for a new category of video-sculpture.[169]

Lastly, Iles mentions a *cinematic phase* starting from the mid-1990s.[170] Film historian Catherine Fowler speaks rather of *gallery films* in which artists since the 1990s incorporate cinematographic techniques. Fowler says "[t]ypically, gallery films situate themselves in relation to the cinema and cinema films".[171]

Image 32: Steve McQueen, *Ashes*, Installation view, Thomas Dane Gallery, London, 2014.

168 Elwes (2005) p. 146. Although technically a TV image is a projection, we do experience the monitor as an object.

169 Herzogenrath and Decker (1989) p. 9-10.

170 Iles (2000) p. 252.

171 Fowler (2004) p. 329.

Art historian Claire Bishop observes a veritable nostalgia for celluloid in the late 1990s.[172] Gallery films are often produced like movies, they use and reinterpret mainstream cinema in order to *dismantle* its mechanisms. Fowler gives examples from works of artists like Sam Taylor Wood, Pierre Huyghe, Steve McQueen and Douglas Gordon.[173] She stresses that the gallery films distinguish themselves from cinema films by their 'vertical expansion': a viewer experiences the images in a more physical sense through *breaking them up* in time and space by means of split screens or multiple screens.[174]

This chronology emphasises the important role projection art played in post-minimalist art-making. Space was *stripped down* by measuring, mirroring, documenting, or abstracting.[175] The majority of works mentioned by Iles have in common a fundamental interpretation of the screen: it is the place where the projection is '*staged*'. In cinematic works the screen is the space of suspension of disbelief. The phenomenological approach addresses the screen as a material object, the projection apparatus as mechanism of illusion are made visible, and the viewer's relation to the projected image is questioned. But, rarely do the two spaces, the virtual and the actual, blend and throw "our *demarcation* of reality and illusion into doubt" [italics S.E.].[176] We as viewers may well become aware of the mechanisms of the illusions at play, yet, the projection does not leave the foursquare screen and enter into our space. What I am trying to describe here is the distinction I see between a dismantling and a layering of space. What gets largely overlooked in the three phases of projection art are those works that address the possibility of layering projections into space. This approach could be grouped under the label of Expanded Cinema, or forms of augmenting projections. What is equally neglected in many theories of video art are influences on projection art from vaudeville culture, spectacle cinema, and pre-cinematic forms of projection, to which I will turn in chapter 4.[177] Recently, there has been a revived

172 Bishop (2012) p. 436.

173 Fowler (2004) p. 329.

174 Fowler (2004) p. 338.

175 Iles (2001) p. 33.

176 I borrow this phrase from art historian Andrew Uroskie. Uroskie (2014) p. 4.

177 Herzogenrath and Decker (1989) p. 9-10. Some exceptions to this are Hatfield (2006), Douglas/Eamon (2009).

attention for Expanded Cinema.[178] People like artist Jacky Hatfield and art historian Andrew Uroskie have questioned the chronology and medium specific narratives of art history relating to experimental film, video art, and 'new media' installations.[179]

Almost realities and *expanded reality*

Laszlo Moholy-Nagy wrote in 1932 "Projection itself is still an unresolved problem. The rectangular screen of our cinema theatre is nothing more than a substitute for easel or flat mural painting. Our conception of space and of the relations of space and light are still absurdly primitive, being restricted to the everyday phenomenon of light rays entering a room through an aperture. It would already be possible to enrich our spatial experience by projecting light on semi-transparent screens, planes, nets, trellis-work, suspended behind each other. ... [T]he morphology of light and film will gain by the general installation of three-dimensional projection."[180] Moholy-Nagy had ideas on moving projectors and wrapped screen surfaces to layer projections in space beyond the rectangular cinema screen.[181] Unfortunately, he lacked financial backing to put these ideas to the test. The *light modulator*, which Moholy-Nagy completed and showed in 1930, seems to have been intended as a projection machine creating an three-dimensional collage of light and shadow. The film *ein lichtspiel: schwarz weiss grau* gives a sense of Moholy-Nagy's vision; close-up shots, double exposure, solarised, prism, and repetitions produce intricate abstract patterns that appear like an architecture of shadows on the screen. This and Moholy-Nagy's writings tickle the imagination of what could have followed; the light modulator potentially is a revolving projector of film images with a randomising effect.

Moholy-Nagy and other avant-garde artists were exploring the potential of film beyond the standard cinema hall projection (see insert 2). In Bauhaus tradition, Moholy-Nagy saw this also as *basic research* for the film industry. Unfortunately, film studios showed little interest in the *light modulator* or Moholy-Nagy's unconventional film script *Dynamik der Gross-Stadt* and he did not find funding to

178 Curtis et al. (2011), Uroskie (2014), Elwes (2015).

179 Uroskie (2014), (2011), Hatfield (2006).

180 The original German text was published in '*Die Form*', 1932, no 5. I am quoting curator Jaap Guldemond's translation. Guldemond (1999) p. 14.

181 Moholy-Nagy (1967) p.41.

pursue his research.[182] However, the film industry did invest into applied research pushing the boundaries of immersive illusion. Early on, the Lumière brothers, among others, worked on 3D technology enhancing depth perception. Even before that, inventor Raoul Grimoin-Sanson installed a sensational combination of ballooning and immersive film technology. At the Paris Exposition Universelle of 1900, he projected ten simultaneously recorded films, stitching a panoramic image of a balloon flight over Paris.[183] The various universal exhibitions offered a (financial) infrastructure for experimentations with immersive projection.[184] Each succeeding world exhibition showcased some sorts of multiple screen film

spectacles. At the Moscow National Exhibition in 1959, Charles and Ray Eames produced *Glimpses of the U.S.A.*, a large scale multiple screen installation inside the Buckminster Fuller Dome. They gave the Muscovites a peek at the lives (and consumption) of the American people. A decade later, a *Time* review, titled *Magic in Montreal,* dubbed the Montreal *Expo 67* 'Celluloid City'. The world exhibition 1967 showed an exceptional number of immersive film installations, although the bulk of the 3.000 films were "straightforward sales-promotion pitches, done with all the imagination of a headache-pill TV commercial".[185] The corporate spectacles at the world fairs pushed technical boundaries and pursued perfect immersion.

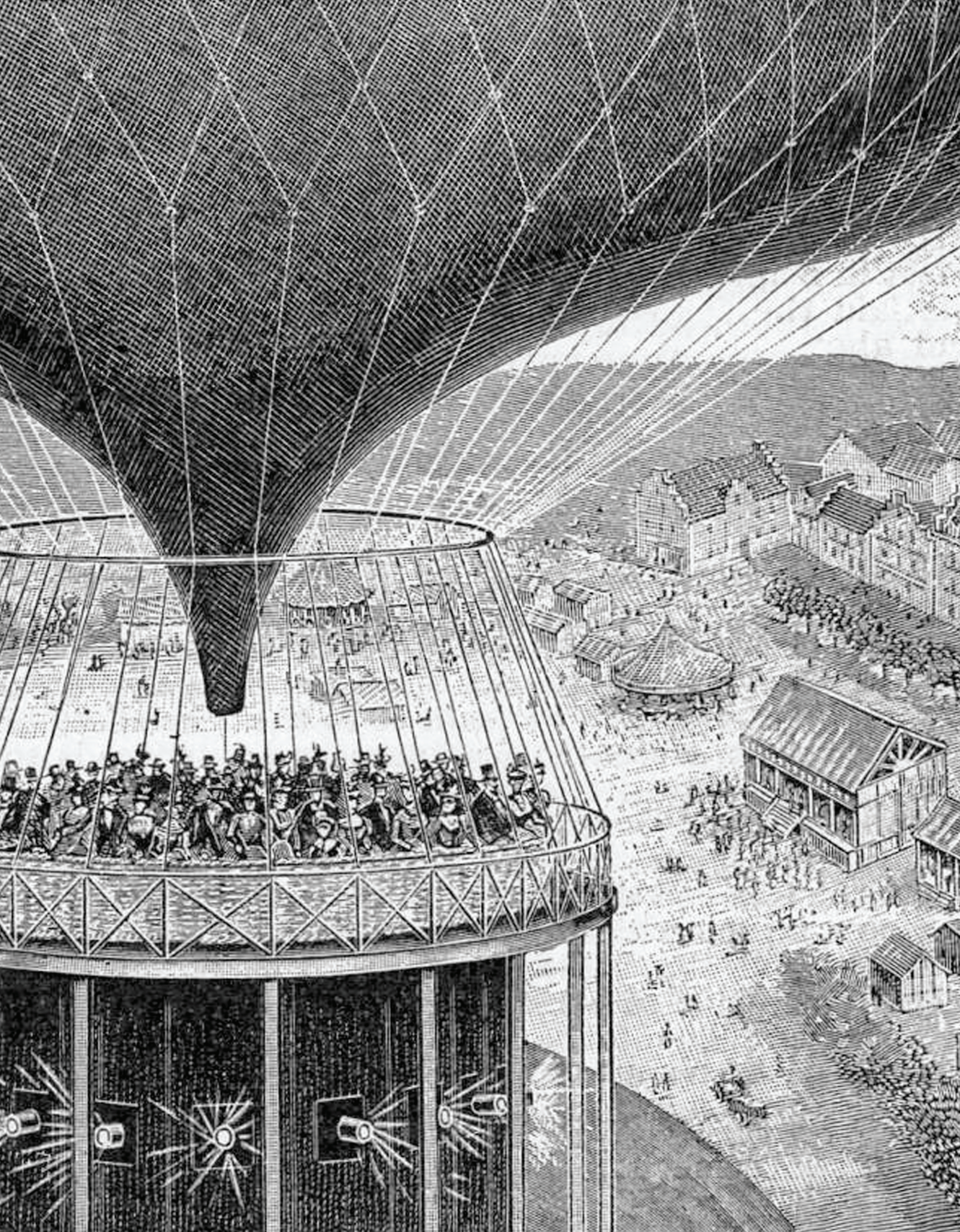
182 Moholy-Nagy (1967) p.41, Sibyl Moholy-Nagy (1969) p. 58, Sahli (2006) p. 84-85.

183 Apparently, the Cineorama of Grimoin-Sanson never really worked because of the enormous heat the projectors generated.

184 Industrial exhibitions became popular in the 19th and early 20th century, names vary from world exhibition, world's fair, world exposition, universal exposition, or simply Expo.

185 Anon. (1967).

Image 33: Charles and Ray Eames, *Glimpses of the U.S.A., 1959*, American National Exhibition, Moscow. Image: Eames Office.
Image 34: Raoul Grimoin-Sanson, *Cineorama balloon simulation*, 1900 Paris Exposition, Scientific American Supplement, #1287, Wikimedia.



It resulted in commercial immersive technologies such as the IMAX.[186] However, the world exhibitions were not the place for *architectures of light* creating an awareness in the viewer stimulating *New Vision (*Moholy-Nagy's pedagogical theory of a holistic enhanced vision).[187]

Experiments with projections layered into space, initiated by the avant-garde in the 1920s, were picked up again in the 1960s by people such as Valie EXPORT, Joan Jonas, Stan VanDerBeek, and Al Robbins. These artists were less interested in 3D or immersive illusion, but attempted to 'expand' two-dimensional projections.

For instance, Valie EXPORT developed a practice of 'other cinema' exposing the conditions of communication of mainstream cinema. Expanded Cinema was an extended collage layering several levels of space, media, and time. EXPORT's notion of Expanded Cinema was developed out of the protest movement of the 1960s and was aimed at a redefinition of art and other forms of communication.[188] In the *Tapp und Tast Kino* (1968) she replaced the cinema screen with her skin. She built a miniature cinema hall fitted in front of her chest, where only the hands of the viewers could enter. By expanding the cinematic experience with the sense of touch, she critiqued mainstream cinema's projections of the female body.

Expanded Cinema brings together works in a vast variety of media and a number of different approaches to projection. In Expanded Cinema, reality is enlarged by panoramic projections that have an absorbing effect. In a theatrical approach Expanded Cinema was used as architecture of light, or as part of performance projecting images onto bodies or objects. Like Valie EXPORT, some protagonists incorporated projections into performance (Joan Jonas, Robert Whitman, Carolee

186 For instance *The Labyrinth,* which was advertised with references to the vastness of gothic architecture. This multiple screen immersive experience was co-directed by filmmaker and later co-inventor of the IMAX Roman Kroitor. Richman Kenneally, Sloan (2010) p.159.

187 Sahli (2006) p.23.

188 EXPORT (undated) A slightly altered version of this text was published in English translation. EXPORT (2011).

Image 35: Vali EXPORT, *TAPP und TASTKINO*, performance, 1968/1969.
Image 36: Robert Whitman, *Window*, film installation, 1963.

Schneemann) and projected images in public space, onto people and buildings (Peter Weibel, Werner Nekes, Malcolm Le Grice, Anthony McCall).[189] Generally, however, Expanded Cinema has been associated with encompassing and panoramic projections like John Cage and Lejaren Hiller's *HPSCHD* (1969), a composition for harpsichord and computer-generated sounds performed as an immersive multi-media event at the University of Illinois; the *Joshua Light Shows* of the same period; *Art and Technology (E.A.T.) Pepsi Pavilion,* Robert Whitman's contribution to the 1970 Osaka World Exposition and, most prominently, the *Moviedrome* of Stan VanDerBeek (1963-65).[190]

For me the performative works, film and video installations of the 1960s and 1970s exist mainly as black and white photographs or in the written accounts of others, and it is difficult to truly imagine their effect.[191] Only rarely are installation works by first generation video artists, like Robert Whitman, Al Robbins, Steina and Woody Vasulka, Valie EXPORT, Shigeko Kubotaor, Wolf Vostell, David Hall, Tina Keane or casual practices like the *TP Videospace Troupe* exhibited or restaged (Andy Warhol being an exception in this).[192] There are multiple reasons for this, not the least because, many works of the time were difficult to archive or simply not made for keeping.[193] Furthermore, some works may have been more design and myth than reality, like the *Moviedrome*. VanDerBeek intended to create what we now might call an internet resource centre: a projection space where the viewer could access

Image 37: Stan VanDerBeek in front of the *Movie-Drome*, Stony Point, New York, 1965. Photograph by Lenny Lipton.

189 White (2011) p. 24-37, EXPORT (2011) p.293.

190 On Robert Whitman see Joseph (2006) p. 64-91, on Joshua Light Show see Zinman (2008) p. 17-21, on Cage and Nameth see Iles (2000) p. 253, on VanDerBeek see Bartlett (2011) p. 52.

191 I realize any historian will tell me this is common to all history writing. For witness accounts see recent publication '*Expanded Cinema: Art, Performance, Film',* Rees et al. (2011).

192 The Tate modern recently restaged some works of Expanded Cinema in Tate Tanks to a limited audience (2012).

193 Author Alexander Keefe asked the question why certain early video works got lost and was told by Andrew Gurian (a member of the 1970s TP Videospace Troupe of filmmaker Shirley Clarke) "Single channel is the easy way to write video history". Keefe (2012).

cinema, theatre, dance, drama, electronic sound, video tape, and libraries of film.[194] Technically it never really worked and VanDerBeek eventually abandoned the idea.

Expanded Cinema

The term *Expanded Cinema* emerged in the late 1960s, most prominently in Gene Youngblood's book of the same name. However, the book leaves the term ill defined. This may well be one of the reasons why Expanded Cinema ended up in the 'dustbin of art history'.[195] Some saw Expanded Cinema as psychedelic environments, a fad of its time, or as too slick and implicated by its corporate sponsorship.[196] Some define it as multiple screen celluloid-film installations, or film projection in combination with objects or performers, predominantly associated with the structural film movement.[197] Others dismiss Expanded Cinema as the tail of abstract expressionism, which would be overturned by video art and video installations with a conceptual approach towards social space.[198]

Expanded Cinema lacked media specificity, both Jacky Hatfield and Andrew Uroskie assert this is one of the reasons why it has been difficult to position Expanded Cinema within histories of experimental film and video.[199] Both also emphasise the importance of pre-cinematic history – the 'cinema of attractions'.[200] In a 2014 study, Uroskie explains how Expanded Cinema was addressing the situation and norms of spectatorship of the moving image industry. Expanded Cinema did so "by returning to forgotten models of early and pre-cinematic history, locating the cinematic event somewhere between the immersive tradition of the movie theatre's black box and

194 Dayal (2011) http://www.frieze.com/issue/review/stan-vanderbeek/ (accessed on 6.11.2015).

195 So writes Uroskie in his abstract to '*Between the Black Box and the White Cube: Rhetorics of Expansion*' (2014). DOI:10.7208/chicago/9780226109022.003.0002 (accessed on 6.11.2015).

196 Geeta Dayal writes in Freeze how in retrospect Stan VanDer Beek's 'Movie-Drome' "seems like a quaint, trippy historical curiosity". Dayal (2011) Branden Joseph quotes Jonas Mekas's responses to Whitman's Expanded Cinema event at 1964 New York World's Fair: "perfectly timed, slick advertisement ... with no art pretensions, pure Madison Avenue". Joseph (2006) p. 64-91. See also Mekas (2011) p. 72.

197 O'Pray (2011) p. 62.

198 Iles (2000) p. 253.

199 Hatfield (2003), (2005), (2006), Uroskie (2011).

200 The notion of a '*cinema of attractions*' used by Hatfield (2006) p. 238 was coined by Tom Gunning describing early film spectacle that grew from the vaudeville entertainment. These early film spectacles lacked concerns "with creating a self sufficient [immersive] narrative world upon the screen." Gunning (1986) p. 65.

the more distanced perception characteristic of the gallery's white cube".[201] Jackie Hatfield defines Expanded Cinema as a cinematic spectacle extending conventional filmic language. She includes a broad history of projection practices and does not apply restrictions of form or material.[202] The 'cinema' in Expanded Cinema, Hatfield points out to us, could be misunderstood to mean film.[203] The 'historical trajectory' of Expanded Cinema runs from proto-cinema ('cinema of attractions') to computer augmentations. She writes: "[E]xpanded cinema in art includes the performative and synaesthetic spectacles of the Futurists; Bauhaus; the happenings of Fluxus; technological experiment (e.g. Experiments in Art and Technology 5 etc.); expanded film of the 1960s and 1970s, and closed-circuit multi-channel participatory video of the 1970s and 1980s."[204] Hatfield's sequence points at contemporary participatory projection practices as the direct descendants and she shows the importance of pre-film forms of spectacle (like the Vaudeville entertainments, Phantasmagoria e.g.).

The perspective Hatfield and Uroskie offer onto the early foundations of contemporary projection installation contrasts with the prevalent narrative of a discipline and medium specific development of projection art with roots in experimental film and conceptual video practices. Without precluding the impact of phenomenological, post-minimalist projection practices, I approve of the emphasis they give to Expanded Cinema and pre-film forms of spectacle. As I see it, Constructivism, 'cinema of attractions' and Expanded Cinema were pivotal moments in the development of projection art. These movements articulated projection as a material layering levels of space, media, and time. By emphasising a layering instead of a dismantling of space when looking at the history of projection practice, those works or aspects of works come into view which are exploring projection as a sculptural material, expanding or augmenting space. To me it offers the possibility of thinking of projection away from the cinematic single screen and is reflected in those projection practices that play with the boundaries of reality and illusion. I am thinking of disparate works such as the slide- and later video-projections in public space by Krzysztof Wodiczko, Tony Oursler's speaking dolls, but also the video-installations by Aernout Mik with their distinct architecture, or the sound and video

201 Uroskie (2014) p. 16.

202 Hatfield (2006) p. 237.

203 Ibid.

204 Hatfield (2006) p. 237-238.

works by Janet Cardiff and Georges Bures Miller. What unites these artists, in my mind, is that their works do not dismantle the effects of projection in a critique of illusion; rather, they blur the borders of reality and illusion by creating a *situation* where a layering of space happens.[205] Let me illustrate this with an analysis of the work of Wodiczko.

Wodiczko has projected image slides in public space since the 1980s. Often his works take place on public buildings or monuments using high powered slide projectors (and later video). The projected images remain largely static, thus merging with the architecture or object. He layers vantage points, references, and recollections onto a three-dimensional screen. Film vocabulary, like fades, panning, cuts, and zoom, would disturb rather than enhance the projections, because they refer to a discontinuity of space and time. In a film projection we accept a break in chronology because we understand the projection as an elsewhere. Wodiczko inserts an image that connects to the continuity of the specific place. However, he does not apply projections as entertainments 'bringing life to' a monument. He calls his projections 'slide warfare' and attacks on sites of bureaucratic self-representation.[206] Wodiczko developed several public projects that give a voice to those marginalised in Western democracies like the homeless, border communities, returning war veterans, or migrants. For instance, the head mounted *Porte-parole* (1993-1997) is a video extension onto the body of an immigrant or refugee. On the video screen, the mouth of the wearer is doubled and tells a pre-recorded story created by the wearer. The head-gear works in the opposite direction as a augmented reality helmet. It does not extend vision of the wearer rather it extends the vision of the onlooker. The *Porte-parole* works as a 'democratic artifice' which allows the wearer to interject

Image 38: Krzysztof Wodiczko, *Porte-parole*, 1993-1997.

205 Uroskie's evocative description of work of Janet Cardiff and Georges Bures Miller shows how the lines between reality and illusion become blurred. Uroskie (2014) p. 3-5.

206 Wodiczko (1999) p. 51-52.

"what must be said" in public.[207] In a later project Wodiczko also used a head-worn instrument to amplify the wearer's stories, yet the resulting audience interaction is far from intimate. For the *The Tijuana Projection* (2001), Wodiczko filmed local women with a head-mounted camera. The footage was projected live onto the dome of the El Centro Cultural in Tijuana in Mexico. In a performative speech act, women working in cheap-labour factories on the Mexican-US border voice their grievances that otherwise go unheard in the community or media. Wodiczko described the effect as "the skin of the architecture and the skin of the person will be background and foreground at the same time", thus blurring the boundary between the projected body and its three-dimensional screen, the architecture.[208] There is a disturbing element of fiction in seeing the sky-high faces of the women.

Wodiczko's projections are inserting something fictitious yet very real that unbalances our world. The projection works last only for a short moment in time, however, the images change the onlookers understanding of the building space or monument; the images in combination with their screens continue to exist in our memory. As the work of Wodiczko shows, augmentation of the object, architecture, or body emphasises the situation of projection. The screen is not neutral, it is socially and historically specific. The object, architecture, or body is not 'invisible' as a screen; rather it gives the projected image a shape and material presence. The projection inserts something virtual that may unbalance material reality by appearing momentary present yet being materially absent. In Wodiczko's works a layering of space happens where he alters our momentary perception of material space.

Wodiczko's work and the tradition I placed it in is an important point of reference for me. His projection works are sculptural in the sense of 'architectures of light'. My entry into the art world happened at the moment when video technology became digitised. This technical shift was important because technology somewhat retreated into the background.[209] At the same time, video projectors became easily available. They triggered a host of cinematic projection works, as mentioned earlier. Nonlinear digital editing let me bypass complicated video production processes necessitated by the hardware, and the cheap video projectors allowed a sculptural

207 Wodiczko (1999) p. 118-124.

208 Power – Art:21, *Art in the 21st Century*, Season 3, 2005, Public Broadcasting Service, USA.

209 I am not trying to play down the importance of technology, but am referring to the big difference of the technically specialised production process of analogue video from the 1960's to 1980's and the consumer level video production tools available to us today.

approach to projection. It also may be significant that I have studied with Expanded Cinema and performance artists like Jim Dine, Joan Jonas, and Valie EXPORT.[210]

I see my own practice of spatial projections in extension to 'the cinema of attractions', film- and light-installations of the 1920s, Expanded Cinema, and projection-art of the 1980s and 1990s. Rather than *stripping away* or dismantling the mechanisms of illusion, I am interested in this blurring of boundaries between the reality of material space and illusionary space of projections. Media historian Tom Gunning observes how contemporary artists challenge the traditional audience-screen configuration as well as the analytical form of viewing, and draws a connection to the pre-history of cinema.[211] He asks: can the *phantasmagoria* "inspire anything other than vague nostalgia?" His reply follows: phantasmagoria is reflected in contemporary art "dealing less with the established formal paradigms of frame and screen and audience, and playing with ambiguities of space, motion, and ontology."[212] And it is in that sense I am interested in the pre-history of cinema. As already shown above, if we were to enlarge the canon of projection art, it could include 'the cinema of attractions' and practices of spatial projections from fields such as the industrial fairs, vaudeville, fairground entertainment, and magic lantern shows.[213] The magic lantern is often cited as pre-history of cinema emphasising its potential as an immersive screen-based medium.[214] I am interested in the history of the magic lantern and other vaudeville entertainment with the *layering of space* and augmentation in mind. In the next two chapters, I will address examples from the long pre-history of projection in art, looking at how projection practices approach reality, and what experiences of reality image projections invite.

210 Joan Jonas was an advisor at the Rijksakademie van beeldende kunsten in Amsterdam. I did a course with Jime Dine in 1991 and Valie EXPORT in 1998 at the Sommerakademie Salzburg.

211 Gunning (2009) p. 34.

212 Ibid.

213 Elsaesser talks of a "need to enlarge the canon of *film history*" and suggests to include installation art of the 1920s and 1970s "that deploy the moving image as a spatial dispositif". Elsaesser (2013b) p. 878.

214 Kittler (1999), Liesegang (1926), Mannoni (1995), Zielinski (2002), Mannoni and Pesenti-Campagnoni (2009).

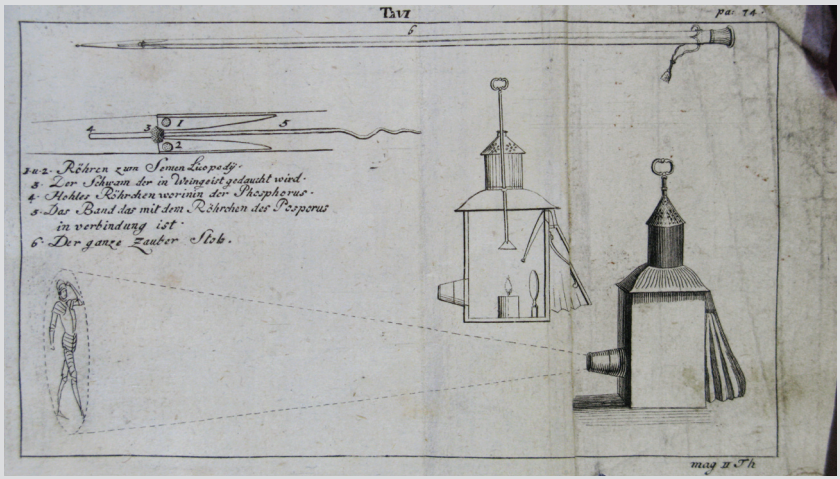
Image 39: Krzysztof Wodiczko, *The Homeless Projection*, public projection, 1986.



The DEMON in the machine:

Tony Oursler and Karl von Eckartshausen

Magic is dressed in the frock of a sorceress. She drives a chariot, drawn by ignorance, deceit and stupidity. In her hand she holds a magic lantern and with it throws a false light onto the world.[215] These are the first lines of an 18th century book on magic and wondrous things. The author, Karl von Eckartshausen, was widely read in his time. In *Aufschlüsse zur Magie aus geprüften Erfahrungen*



(1789-90), he explains the psychology of lantern induced magic, and gives solid descriptions of how to summon ghosts. He lists novel electric machines (stunning the attendants with electrical shocks), sound effects (amplifying and directing sound reflectors), drugs (intoxicated viewers were more receptive to the supernatural), and magically extinguishing lights (thin glass balls filled with spirits which exploded in a flash when heated in a candle).[216] In the first volume he advertised a pocket lantern fitted for a coat pocket as well as a hollow cane prepped with phosphorus made to order. Eckartshausen described how he used the cane and pocket projector for impromptu performances:

Image 40: Frontispiece, Eckartshausen (1788).
Image 41: Eckartshausen (1788) Ta VI, p. 74.

215 Eckartshausen (1788) p. a5.

216 Ibid., p. 134.



"One day I went for a walk with several people. It was around dusk ... I remarked: This would be an auspicious setting to summon a ghost. Immediately I struck my cane on the ground and a large flame shot up. A white ghost rose from the earth and disappeared again when I hit the ground a second time. The impression of this unexpected phenomenon was too much for my companions and they all fled. It was incomprehensible to them: they saw that there could not have been any preparation, and what they experienced was all beyond reason." [217]

Eckartshausen wrote several other books on magic, Enlightenment, ethics and theosophy. His intention was to proof that we should not believe all, yet also not reject all, when it came to magic.[218] He argued that if humans managed to build ships and came into contact with a before unimaginable world and people across oceans, why would it be impossible to cross the boundaries to the spirit world? Too little was known of human imagination or the power of dreams and what triggered and shaped them.[219] Eckartshausen experiments with magic lanterns seem proof of a layered reality that references back to dreams, memories, believes, deceptions and projections.

Judy is a small rag-doll in a flowery dress. She is jammed between a sofa and the floor and curses softly between her teeth then louder: "Fuck you, hey fuck you". She is also a bunch of flowers yelling. In author Billy Rubin's interpretation of Oursler's work, Judy is a horror doll asking god to stop.[220] Oursler is best know for his aggressively talking dummies. The handmade rag-dolls are placed in awkward positions addressing the passing viewer. Oursler appears to have inverted the settings of his early video-tapes; turning the interior of the screen outside into the gallery space and displacing the screen onto the rag-dolls and other objects. According to Oursler the dummies take the space of the TV screen and displace it. He says "[v]ideo no longer acts as a window to look through but is somehow made physical."[221] Recently, during an interview he placed his head next to one of his sculptures and showed how the work

Image 42: Eckartshausen (1788) Ta V, p.74.

217 [translation S.E.] Eckartshausen (1788) p.136.

218 Ibid., p.13.

219 Ibid., p. 116.

220 Rubin (2013) p. 183.

221 Janus (2010) pdf.

had brain size; "stages of the brain" he said.[222] The works come across as small autonomous entities that address the fractured compositions of our interior worlds. Oursler says: "My work is designed to work *with* the way we really see, which has to do with a very complicated referencing system full of memory, conjecture, and multi-voxed narratives" and "[t]his is in opposition to a film grammar, which is about looking outward and attempting to replace the eye."[223]

What does reading Oursler work in conjunction to Eckartshausen reveal? Their motivations appear distinctly different, one a 21st century artist, the other a 18th century philosopher. Eckartshausen used magic lantern projections partly as entertainment and partly in scientific proof of arguments that Enlightenment is not entirely a matter of human reason. Oursler equally engages his audience and provokes empathetic responses. To both, Eckartshausen and Oursler, projections seem extensions of the human psyche. Oursler is highly aware of pre-cinematic traditions of projection practices. He documented a history of projection in an 'optical timeline'.[224] The timeline gives an overview of horror and fear in relation to developments of optical technologies. Oursler says "the demonic has been and remains associated with technology'".[225] Oursler's 2013 work-anthology mentions the timeline as "nurturing [Oursler's] conviction that optical machines ... are an extension of the psyche and as such are haunted by demons, phobias, fantasies and obsessions similar to those which haunt the human soul."[226] Oursler's objective is not to prove arguments, rather to give form to a contemporary condition of a fractured viewer in front of a disintegrating screen.

Image 43: Tony Oursler, Reflection, installation, 1996.
Image 44: Tony Oursler, Screengrab, Youtube video, 2014.

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222 https://www.youtube.com/watch?v=NyiFmZmV4lY (accessed on 6.5.2014).

223 Janus (2010) pdf.

224 https://tonyoursler.com/~tonyours/files/opticaltimeline_2008.pdf (accessed on 6.5.2014).

225 Gielen (2013) p.12.

226 Ibid.

FIGURA XXIII.



3. Conditions of Illusion
Performing or Staging Projections

Image 45: Vision rays thrown at a flying dragon. Johannes Zahn illustrates the misconceived concept. Zahn (1685) p. 215.

"[I]t [the fear of the invisible world] can bribe us into a voluntary submission of our better knowledge, into suspension of all our judgment derived from constant experience, and enable us to peruse with the liveliest interest the wildest tales of ghosts, wizards, genii, and secret talismans."[227]

S. T. Coleridge, 1817

227 Coleridge (1817) p. 261.



It is said that the 16th century sculptor Benvenuto Cellini was a *braggadocio*.[228] Cellini liked to brag. He also liked a good fight, sex, and suspense and his autobiography is a document of that. One story that includes all of it is actually a description of a magic lantern performance. The background of the story is that Cellini was after a beautiful Sicilian girl and to get his prize he sought the help of a magician-priest. Accompanied by some friends and a virgin-boy from his workshop they watched the priest call up major demons at the Colosseum to make a deal with the devil concerning the girl. When the Colosseum filled up with hundreds of demons even the necromancer-priest got scared. Cellini was hiding his own fear, which did not lessen the mortal agony of the shop-boy: "... [T]he boy ... cried out in terror that there were a million tremendously fierce-looking men and they were threatening us; then he added that four enormous giants had appeared and that they were all armed and advancing as if to break in on us."[229] Cellini describes the boy crouching on the ground head down. "The boy had struck his head between his knees and was crying: 'I will die like this – we're all going to die!' At this, I said to him: 'These creatures are only our slaves; all you can see is only smoke and shadow. So come on, look up!'" Some devils' dung (asafoetida) was thrown on the fire to make the demons go away. Eventually the story ends quite to Cellini's satisfaction; running from the law after killing a man in a street-brawl he meets his girl by chance and spends the night with her.[230]

In this chapter I will address the role of the screen in delivering an illusion. I argue that a virtual image can be performed or staged. As an artist, I place and integrate a projection into a (social) context. One aspect of how the projected image is understood by a viewer depends on the role the artist assigns to the screen. Is it the locus where the virtual image is staged – like the invisible cinematic screen? Or is the viewer confronted with the screen as a distinct object – with the projection (the virtual image) as additional but not separate information?

228 Cellini (1848) p. 277.

229 Cellini (1956) p. 115.

230 Cellini (1956) p. 115, 117.

Image 46: R.I. Martin, *The Witch of Endor.* Engraving after B. West, 1811. Wellcome Library, London.

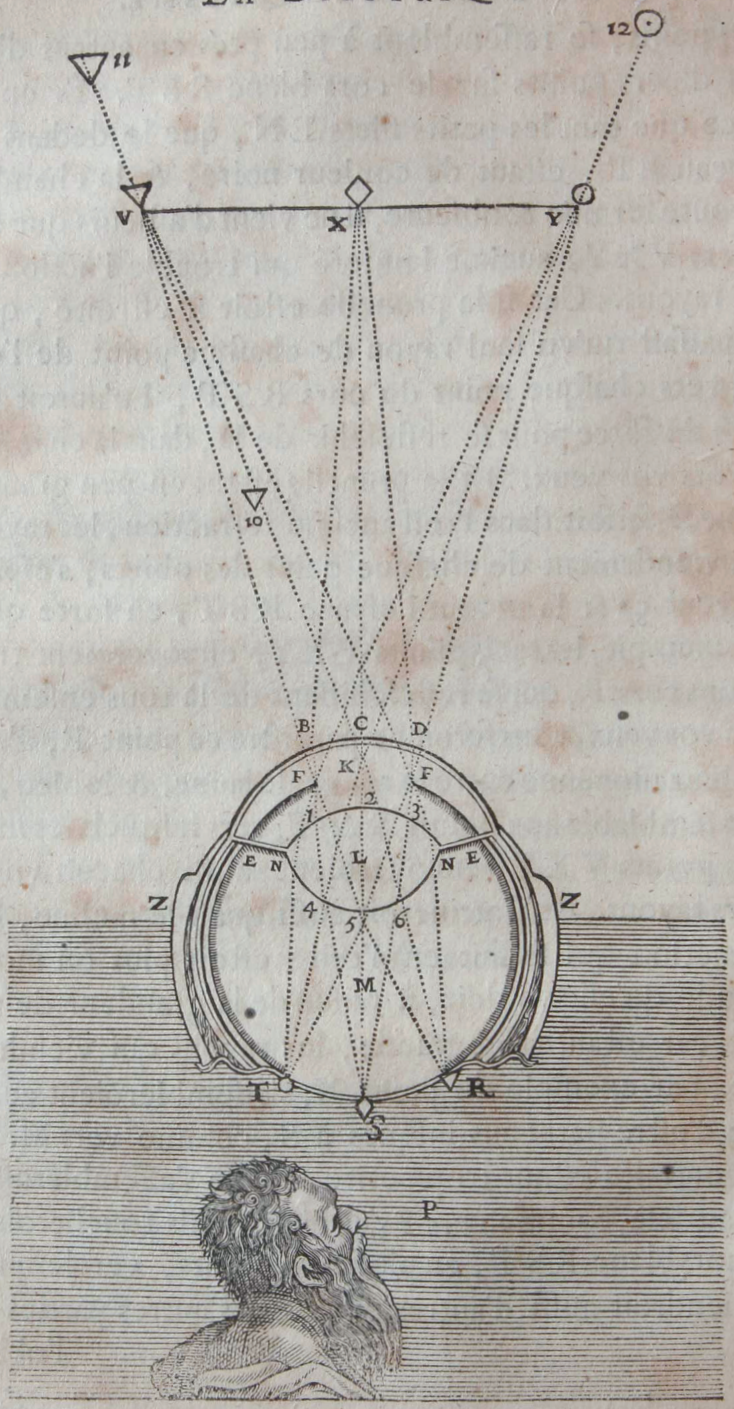
In 2001 media theorist Lev Manovich described how computer based media did not only introduce new ways of seeing, they equally changed older cultural forms like cinema or photography, and the way we understand and represent ourselves.[231] The early modern period also saw a media revolution that changed the way of representation. One aspect of this revolution was the development of optical media. From the 17th century onward the nights lit up and the moon and stars were coming closer. Magnifying glasses could probe far and deep, technical possibilities may have seemed endless. Spherical looking-glasses (magic lantern projectors) appeared to make remote objects, like ghosts and phantoms, visible.[232] Communicating with souls and spirits may have seemed something that should be possible in the near future. Enlightened scientists exposed the illusions of the *Fantasmagorie* as "pure charlatanism" that is not "advancing by a single step or making any progress in the pursuit of the sciences, serve only to capture the admiration ... of the public".[233] The 'science expert' who wrote this verdict failed to recognize the visionary investigations the illusionists made into our sense of space and imagination.

Illusionists' claims of seeing beyond this world may have been preposterous, nonetheless it is possible to look at the theatrical seances as experiments in layering space with projections and attempts of finding alternative ways to represent ourselves. Our experience of reality, however changing, layers elements of material, physical, imaginary and symbolic space. The question is how do we understand the 'reality' of the projected image? Our understanding of an illusion relies on

231 Manovich speaks of a media revolution: "the computer media revolution affects all stages of communication, including acquisition, manipulation, storage and distribution; it also affects all types of media – text, still images, moving images, sound and spatial contructions." He lists five categories of consequences to the new status of media, namely "numerical representation, modularity, automation, variability, and cultural transcoding." Manovich (2001) p. 19-20.

232 Charles Patin, a Frenchman traveling around Germany in the 1670s writes "Some mention has been already made ... of that Spherical Looking-glass, which receives the several Species [appearances] of remote Objects thro' a small Thread of light, and which rolling about in the dark, imprints 'em on it, and causes 'em to follow its Motion; so that real Phantoms and Ghosts are now no longer sensible of the other World." Mannoni (2000) p. 60.

233 Phantasmagoria was called Fantasmagorie by Étienne-Gaspard Robertson, the most prominent projectionist (or Fantasmagore). In 1800 Robertson fought one of his competitors in a court case. Robertson had patented his fantoscope. The science experts Pierre Jamin and Jean François Richer were called in to evaluate the originality of the 'invention' and they concluded that it was a reworking of the magic lantern also used by the showman Paul Philidor. Philidor performed illusion lantern shows during the early 1790's, the middle of the 'First Terror" of the French Revolution. Philidor had left France shortly after projecting some politically unwise cartoons (Robespierre, Marat or Danton projected with claws and horns). The performances were still fresh in the memory of Parisians. The Report by Jamin and Richter from 17 July 1800 is in the Archives de Paris. Compare: Mannoni (2000) p. 171.


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the structure of our optical system, expectations and media competence. As artist, knowingly or not, I use these factors of a viewer's perception. Optics, studies of perception, media studies, and more recently neuroscience are large fields that deal with how and what we see. These studies are beyond the scope of this text, but I do want point at a few aspects of perception that I might give consideration in my use of projection.



Every day when we look into a mirror we look into a virtual space. We experience the space in the mirror as actual physical space, until we see our reflection and recognize the mirror (Pepper's Ghost or any of illusionists David Copperfield's disappearance acts look 'real' because we do not recognize the mirror). This is true for all kinds of projections; as long as we do not know the material reality (i.e., as long as we don not recognize the mirror as mirror, the projected image as projection) we probably expect a projected space to be a physical space. Is this simply because of how our eyes are wired? Although there is more at play than simple optics when seeing, the following illustration by René Descartes gives the basic physical structure of our optical system.

Descartes draws a parallel between our vision and projection and likens our eye to a camera obscura. Points of a triangle VXY are projected onto the retina as an equally shaped triangle TSR (see image on the left). In his *Discours de la méthode (1637),* Descartes gives instructions to his reader to repeat the dioptric experiment. An eye is cut open (if a human eye is not at hand, a cow's eye will work equally well) and placed on a small hole in front of a dark chamber. This way the eye becomes the aperture and the back wall of the room replaces the retina. The illustration to Descartes' text shows a bearded man looking at what must have been a giant's eye.[234] Descartes' cosmic observer sees the projected image reverted, as an image would be projected onto our retina. The visual space is created in our brain, even if we are not conscious of the reversion that happens in our brain when light enters the iris.

Image 47: Natural eye, figure #17, Descartes (1637) p. 42.
Image 48: *Duck Soup,* dir. Leo McCarey, (USA: Paramount Pictures, 1933).

234 Descartes (1637), compare: Friedberg (2006) p. 51.

The wiring of retinal imaging has taken millions of years to develop. How does the brain translate reflections in a mirror into a space behind the mirror? Umberto Eco suggests that possibly the mirror has been around for too short a time for our brains to rewire and rethink reflections "at the level of conceptual consideration".[235] Our brain, according to Umberto Eco, "cannot quite clearly differentiate between the physical phenomenon and the deceptive illusion it encourages, in a sort of spread between perception and judgment. So we use the mirror image correctly, yet speak of it wrongly, as if it did what we ourselves are doing with it (that is, reversing it)."[236] The interpretation of reflection – how people understand and handle virtual images – changes over time and space. This becomes clear when we look at the widespread ritual to cover mirrors during bereavement, originating from a belief connecting reflection to the afterlife. Buddhist philosophers may assign an equal amount of agency to the reflection of an object as to the object itself, as, in Buddhist thinking, neither the object nor the reflection is real.[237] They are both figments of our imagination.

In a sense, the imaginary is based on social conventions. Artistic representations rely on several relationships, most importantly on the relationship of the artist, the art work and spectator. The artist can create an expectation which will heighten the anticipation of a viewer. Gombrich gives as example an image that is incomplete or blurry which invites the viewer to fill in and continue the representation. Equally suggestive is a painting in which some of the action takes place outside of the frame. Or Baroque church ceilings, where the boundary between architecture and painting is purposefully blurred and the light that falls through the church window appears to continue in the painting, creating an illusion of continuity. As Gombrich puts it, "All representation relies to some extent on what we have called 'guided projections'."[238] The image becomes suggestive to a viewer's imagination.

Gombrich describes the importance of prior knowledge of the viewer in the process of identification. Or as W.J.T. Mitchell interprets Gombrich; "vision ...

235 Eco (1984) p. 206.

236 Eco (1984) p. 206.

237 Westerhoff (2010) p. 162.

238 Gombrich (1986) p. 170.

is a product of experience and acculturation".[239] Gombrich points at the mechanisms in our brain reaching simple interpretations of a form out of a biological necessity.[240] Fetish and cult images of early cultures were believed to have human like agency.[241] Since then, so Gombrich says, illusion requires an expectation to turn into deception.[242] We have to suspend our disbelief to enter into the illusion. An image-maker relies on the empathy and identification of her spectators as well as their education in pictorial conventions. To involve the audience in a game of suspension of disbelieve she applies psychology of vision.

Up to now I have looked at the anatomy and the neurological wiring of the eye, as well as the psychology and social conventions of seeing. Illusion has also technical component and what we see may also depend on our media-literacy, i.e., the understanding of the projection technology. Rather than literacy Grau refers to media competence. He explains how 'unconscious' illusions become 'conscious' after some time: "The connection between innovations in technologically produced illusion and putting the inner ability to distance oneself under pressure, may, for a period of time ... render conscious illusion unconscious and confer the effect of something real on that which is merely appearance... this gap narrows again with increasing exposure".[243]

239 Mitchell furthermore argued for a "rigorous relativism that regards knowledge as a social product, a matter of dialogue between different versions of the world, including different languages, ideologies, and modes of representation." Mitchell (1984) p. 525. "There is no "pure" visuality, or, as Gombrich pointed out long ago, "[T]he innocent eye is blind." And innocent here means, quite precisely, untouched." Mitchell (2008) p. 13.

240 Gombrich (1986) p. 172-174. It may be worth noting here that since the 1980's Gombrich's approach (as well as Panofsky's) to art history has seen a good amount of criticism for the lack of social context, as well as an absence of a post-colonial or feminist awareness. This criticism has come from for instance the New Art Historians. Manghani, Piper, and Simons (2006) p. 84. Art historian James Elkins points out in an essay on Gombrich's marginal role in current art historical debates, that Gombrich's central interest included the psychology of art and studies on perception. Elkins asserts that "[o]utside of art history, [Gombrich's] *Art and Illusion* (1960) has had a measurable impact on aesthetics and studies of perception". Elkins (2009) p. 305-306. Since 1960 vast developments in theories of vision have taken place, some of the scientific theories Gombrich referred to (e.g. Gestaltism) have "not stood the test of time". Mitrović (2013) p. 71-90.

241 It is questionable that magical thinking is a 'primitive' attitude. Gombrich locates this 'primitive magical thinking' in a distant past. In his writing he appears to make a distinction between primitive and modern cultures. Among other cultures Catholics today will dress sculptures, take them for a walk and witness them weep or speak. This attitude towards a primitive other (in past or present) has been a point of critique on Gombrich's work. See Araeen (1987) p. 6-25, Errington (1998) p. 53, Gall (2014) p. 9.

242 Gombrich (1986) p. 172-174.

243 Grau (2003) p.152.

At the same time, when we unconsciously see a mirror reflection as an extension of space, that illusion does not go away even once we recognize the mirror as object. So, understanding how an illusion is brought about does not mean being unable to enter into an illusion, if only under another premise.

I myself rarely stop and think about the anatomy of the eye, neurological facts, or social conventions of seeing when I assemble an installation or project an image. Yet, I play with my viewer's perception when I layer images into space. I anticipate expectations and answer or frustrate them. Artists (and magicians) work with the imperfections of perception in mind. Not only is our vision imperfect, our sense of space is complex. Projections in space add to that complexity.

Projection makes objects that are absent visible in space. Projected images are virtual, although they *appear* to have all properties of material space. Projections seem to dislocate space and time. How space itself appears to us is not as rational as Descartes' diagram of retinal reflection might suggest.[244] The phenomenology of space has been a subject in many different fields of study, from geography and art history to psychology – we need not go into such depth here. I only want to stress the complexity and layered nature of our experience of space. Let me turn to art historian Erwin Panofsky for a definition of perceived space, because he distinguished between an *aesthetic space* and a *theoretical space*.

Perceived space, he said, is represented either as *logical form* (geometrical space) or *visually symbolized (*symbolic space).[245] How space is represented stands in relation to how it is *theoretically conceived* and, according to Panofsky, Renaissance use of perspective resulted in an *objectification of the subjective*. "The result was a translation of psychophysiological space into mathematical space".[246] Perspectivist representation of space is homogenous, i.e., an abstraction. psychophysiological space, however, the space of our experience, is not homogenous.

The sense of space, or *Raumgefühl* as Theodor Adorno calls it, "is not a pure, abstract essence, not a sense of spatiality itself, since space is only conceivable

244 Panofsky (2002) p. 31.

245 See Panofsky (2002) p. 45. "Panofsky's use of the symbol stems from Cassirer's *Philosophy of the Symbolic Form*. "[Cassirer] defines the symbol "in which something 'sensuous' (ein Sinnliches) is represented as a particular embodiment of 'sense' (Bedeutung, meaning)." Neher (2005) p. 360.

246 Panofsky (1927/ 2002) p. 66/ p. 31. On psychophysiological space Panofsky quotes a lengthy segment from Cassirer where Cassirer explains that "[v]isual space and tactical space [Tastraum] are both anisotropic and unhomogeneous in contrast to the metric space of Euclidean geometry". Panofsky (2002) p. 30.

as concrete space, within specific dimensions." Space is in no way neutral and, as Adorno continues, "History has accumulated in them [forms and material], and spirit permeates them."[247] Our sense of space is interconnected, complex and layered, furthermore it is impacted by psychological projection. This complexity is important in order to understand the augmentation of space and to use it artistically.

With the above in mind, let me look again at Cellini's description of floating demons at the Colosseum. The location of the séance organised by the magician-priest may not have been of small importance. The violent history of the rundown amphitheatre would have been an aspect informing the sense of space, and encountering ghosts and spirits (of slain Christians) may have not at all been unthinkable to Cellini and his companions. They may have interpreted the space they saw before their eyes according to their expectations; they saw what they wanted to see. Yet, what psychological projections were at play? Did Cellini and his friends give the apparitions primary belief or did they suspend their disbelief? Were they familiar with projection technology? We can only speculate. In whatever way Cellini interpreted the event, virtual demons augmented the space of the Colosseum. The projections added a dimension to the experience of the amphitheatre. I think it is possible to conclude from Cellini's description that he knew the images of ghosts and demons were a play of projected light. Did he not say to the shop-boy: "all you can see is only smoke and shadow"?[248]

Construction of screen space

The shadow and smoke Cellini mentioned might refer to the materials of the illusion, i.e., projections of shadows onto a screen of smoke. Whether we are directly aware of the screen or not, projected images need a surface to materialise. According to media historian Anne Friedberg, this surface "is the locus of lost dimensions of space and technological transformation of time".[249] Friedberg cites philosopher Paul Virilio, who described the screen as the site of "the passage from something material to something that is not".[250] In her book on the virtual window Friedberg illustrates this dematerialisation of the interface with a photograph

247 Adorno (2005) p. 12-13.

248 Cellini (1956) p. 115.

249 Friedberg (2006) p.184.

250 Ibid.

by Hiroshi Sugimoto. (ill. *Cinerama Dome, Hollywood,* 1993) Sugimoto's long exposures of cinema screens render the screen as a gaping emptiness. Another artist who has persistently addressed the ambivalent materiality of the interface is

Anna Anders. In works like *TV Cleaner* (2002) the interface appears as a material barrier that is cleaned. Works like *Pleasure Bath* (2000) cancel out the screen by the image of the projection – sand projected onto sand, water onto water. Another work called *Video Guards* (1993-2005) obscures the interface and directly addresses museum visitors. In chance encounters of the *Video Guards* with the museum audience, Anders creates a moment of insecurity in the viewer regarding the reality of the virtual image.

The screen is an 'ideal space' that can become an anywhere; however, in its gaping emptiness it is first a no-where. Grau has shown how all-encompassing virtual spaces are geared to take the viewer into another world. The projected image approaches us "as the source of the real".[251] The rendition of an imaginary screen space relies on a separation of one visual order from another into two parallel

Image 49: Hiroshi Sugimoto, *Cinerama Dome, Hollywood,* 1993, Black-and-white photograph, The Museum of Contemporary Art, Los Angeles.

251 Grau (2003) p.13.

realities, on-screen and off-screen. Quite tellingly, in the cinema a curtain used to be drawn when the projection light extinguishes, hiding the interface between magic and reality. The function of the screen is a technical necessity. When we look at a cinema screen, we don't see the material object of the screen as much as we see the projections staged on the screens. How does this compare to the screen of an augmentation that overlays projections onto the material world?

In the case of augmentation, screen and projection are fully integrated, and of equal importance. The relationship between the screen and the projection differs from immersive cinematic projections. We look at a screen in a mobile phone yet operate the object. The projection does not cancel out the materiality of its screen like the cinema does. The information of both screen and projection is experienced



at the same time. The screen as object is augmented by the projection and the viewer is invited to use the object and the projected interface. A cinema screen mounts or '*stages*' a projection; the screen when augmented is carrying out or '*performing*' the projection. The nature of a screen as either immersive or augmented space is not specific to new-media. Let me illustrate this with examples from painting.

Two prominent examples of mirror-reflection in painting are the *Arnolfini portrait (1434)* by Jan van Eyck and *Las Meninas (1656)* by Diego Velázquez. Both works have foregrounded the subjects of the portrait. In either of them, the source of light is coming from a window which is situated on the edge of the canvas. The wood and stone of the window frame is barely visible, we get no more than a hint of a continuing space. What makes these two paintings so exciting to look at is

Image 50: Anna Anders, *Video Guards*, 1993, video installation. Image courtesy of the artist.



the immersive yet self-referential arrangement of space.[252] Both artists have placed a small mirror on the wall which closes the space of their painterly illusion. That mirror appears to reflect what is in front of the canvas. Space is seemingly extended from virtual space into the viewer's material space. The viewer is drawn into the image space towards the mirror, to be reminded of the construction of the canvas as illusionary space. The frame, window, mirror (and canvas in case of *Las Meninas)* make the viewer aware of the painterly illusion as just that.

In both the van Eyck and Velázquez paintings, the painter is, according to some interpretations, present as 'metteur en scène'. Although Velázquez's presence as creator of the scene is visually more prominent than van Eyck, the role of the artist as witness, in Panofsky's terms, appears clearly defined in both.[253] Above the mirror in the Arnolfini portrait the painter wrote 'Jan van Eyck has been here'. As viewers, we take part in a historic moment reflected in the eyes of the artist. The representation staged in *Las Meninas* is just as complex. Michel Foucault points out how the focus of the painting is as much on what is represented as on what necessarily is invisible. The mirror is pivotal. "For the function of that reflection is to draw into the interior of the picture what is intimately foreign to it: the gaze which has organized it and the gaze for which it is displayed."[254]

A very different example of linking virtual with material space beyond the interface of the canvas is a painting by Michelangelo Merisi da Caravaggio, the *Medusa* (1597). The painting is a convex shield. Caravaggio depicted the decapitated head of Medusa screaming and bleeding profusely.



Image 51: Diego Velázquez, *Las Meninas, (detail)*, 1656–57, El Prado, Madrid.
Image 52: Michelangelo Merisi da Caravaggio, *Medusa*, 1598 -1599, Uffizi, Florence.

252 Bolter and Grusin mention Velázquez's reference to the medium, the painting as such, in *Las Meninas*. They refer in this context to the term hypermediacy. Bolter and Grusin (2000) p. 37.

253 The red figure in the mirror could possibly be van Eyck, however van Eyck is not portraying the act of creating the scene. Panofsky (1953) p. 437. It is Panofsky's opinion that van Eyck performed the role of the witness and the painting was an 'artistic marriage certificate'. "[W]e can understand the original idea of a picture which was a memorial portrait and a document at the same time, and in which a well-known gentleman-painter signed his name both as artist and as witness." Panofsky (1934) p. 124.

254 Foucault (2000) p. 411.

She appears to just have lowered her gaze in mortal agony. In Caravaggio's painting, the canvas *becomes* the polished shield of Perseus – we, as Perseus in the myth, can safely look at the reflection of the Gorgon. The mirror image breaks the lethal impact of the direct look of Medusa. Art historian Genevieve Warwick reads the Medusa as a metaphor for the "stupefying power of pictorial illusion".[255] Interestingly, Caravaggio is giving the illusion a material presence in space. The canvas, stretched onto a shield, is representing Perseus's shield.[256] Caravaggio appears to have intended a different relationship between himself (the creator), the representation, and its audience. He created the mirror as an object and on it he painted a mirror image – the momentarily reflection on the shield of Perseus, the unique perspective of Medusa's own gaze. By fixing the reflection of Medusa onto an object, Caravaggio appears to have made the subjective view of Medusa into an objective viewpoint. As viewer I take the position of Medusa in front of the mirror. In this relationship Caravaggio is necessarily invisible as the creator of the illusion of objectivity.[257] Thus, the boundaries between object and representation blur.

Van Eyck, Velázquez, and Caravaggio use the illusionistic presence of the mirror in their paintings. According to Warwick, the difference is that van Eyck and Velázquez, in the tradition of the Renaissance, *stage* the 'mirror space' whereas Caravaggio has his painting *perform* a mirror.[258] To extend my earlier argument I suggest to replace 'staging' and 'performing' with the concepts of immersion and augmentation. Caravaggio's canvas is not "the locus of lost dimensions of space"[259] in the sense of immersing us in an alternative pictorial space, rather, I would argue, the image is layered onto the material reality of the shield as an extension of that object. While the object with van Eyck and Velázquez is a piece of cloth/wood, for Caravaggio it is a wooden shield covered by canvas representing a polished metal shield. When Caravaggio created the shield of Perseus he may have intended an illusionary object, taking painterly illusion a step further, the effect he speculated on creating is that of a genuine shiny shield with its reflection; this could be called an augmentation.

255 Warwick (2006) p. 18.

256 Bal (1999) p. 135.

257 Even though art historians have concluded that Caravaggio painted himself as Medusa. This does not reveal itself, unless we know the likeness of the painter. It does add an interesting angle to the whole equation of what is reflected to whom. See Friedlaender (1955) p. 87.

258 Warwick (2006) p. 13-22.

259 Virilio writes the screen serves as the locus of lost dimensions of space. Friedberg (2006) p.184.

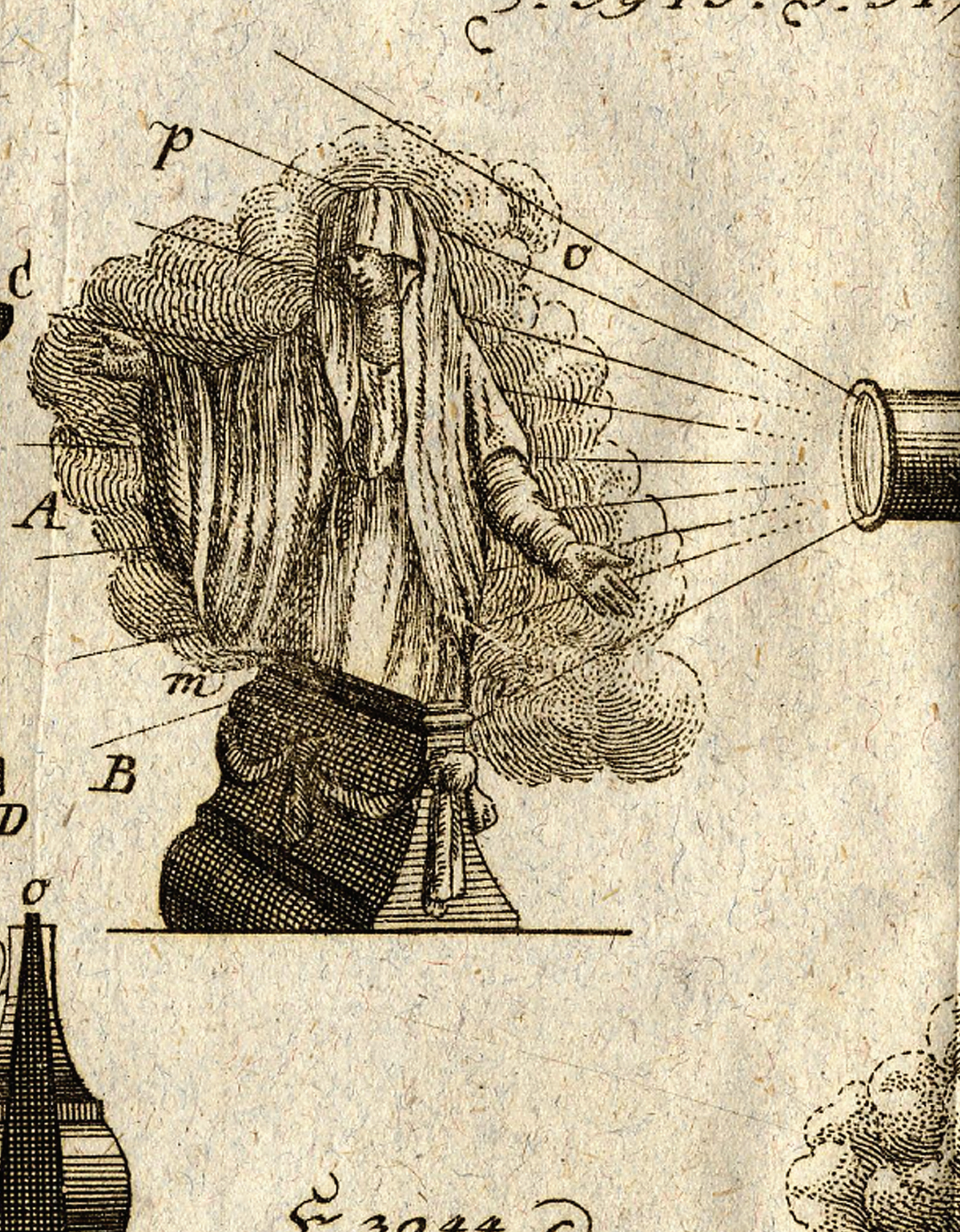
Image 53: Jan van Eyck, *Arnolfini portrait*, (detail), 1434. National Gallery, London.



Our sense of space is less informed by what is materially there, than by what we know and what we expect, as is argued by for example Gombrich. When trying to understand what happens when we see an immersive or an augmenting projection, the key question is how we perceive 'reality' in the first place. The studies referred to in this chapter do not use the terminology of immersion or augmentation; however they describe the conditions required to engage with virtual images.

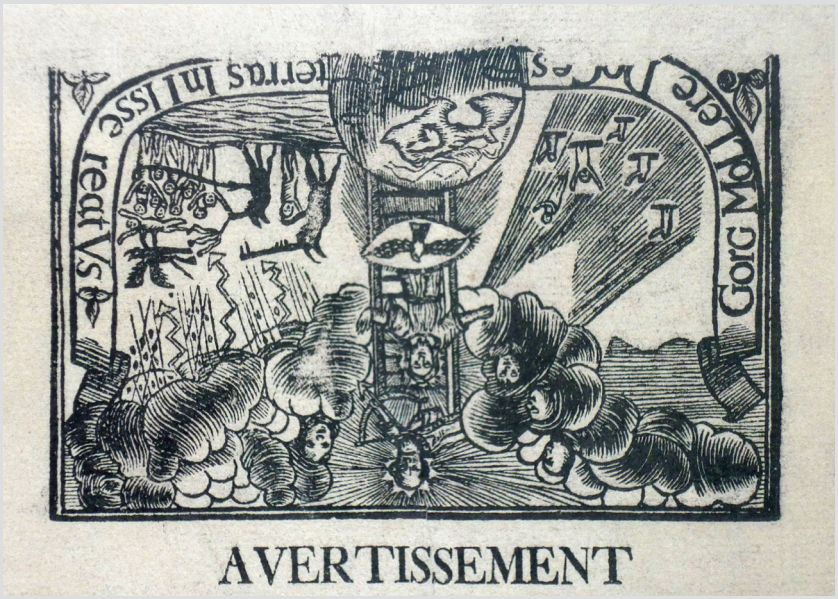
As an artist, I want to engage the imaginative faculties of a viewer. I apply psychology of vision, I try to shape a spectator's experience and the context in which she is viewing a projection. Immersions offer an exclusive alternative to material reality; a virtual image is staged on a screen, and we look past the screen to see a projected other world. An augmentation, on the other hand, tries to create a tight coupling of a projected reality and the material world. In this instance the screen might be an object we interact with on a similar level of reality as the projected augmentation that is mapped onto it, Expanded Cinema described in the previous chapter being a case in point. Let me restate: immersive projection and augmentations are set apart by their distinct use of the screen; I argue that immersive projection stage and augmentations perform a virtual image to an audience.

What we know and what we know to expect depends largely on social and cultural conventions. As we have seen in chapter 2 these conventions are continuously questioned and changing. In the next chapter I look at developments of viewing conventions during the early history of projection technology. The image projector became a workable tool during early modern times. How projections should be read was not yet clearly established. Five hundred years of technological development created a medium that can almost perfectly simulate reality. My fascination with this part of the history of projection is how, before the cinema screen became the norm, the projector was performing different roles in warfare or military reconnaissance, magic, interior design and stage entertainment.


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Phantasmagoric SCREEN:

Philadelphia, Philidor and Robertson



"For all lovers of supernatural physics is hereby made known that a few days ago the world famous magician Philadelphus Philadelphia, who Cardanus already mentioned in his book '*De natura supernaturali*', calling him 'envied by heaven and hell', has arrived here by ordinary coach, though it would have been easy for him to come through the air."[260] These are the first lines of an '*ADVERTISEMENT*' announcing the arrival of Jacob Philadelphia in Göttingen in 1777; it was a spoof by local professor for experimental physics Georg Christoph Lichtenberg. The illusionist Philadelphia had acquired fame touring Europe with a magic act. His shows included projections on smoke, which were banned during his performance in Vienna because they appeared too real. The mock advertisement was posted all over town and ridiculed the magic show as irrational humbug and thievery. To Lichtenberg the performance was a big hoax. Quite obviously the professor did not believe in plays on imagination devoted to 'pleasure and pastime'.[261]

Image 54: Krünitz, Johann Georg, *Oekonomisch-technologische Encyclopädie*, (1773 - 1858) Bnd. 65, p. 517.
Image 55: Frontispiece, *AVERTISSEMENT*, Georg Christoph Lichtenberg, 1777.

260 Translation S.E. Lichtenberg (2004).

261 More on Jacob Philadelphia see Jütte (2011), (2007).

Theatrical projectionists who came after Philadelphia took care to denounce any superstitious enchantments: "I will not show you ghosts, because there are no such things; but I will produce before you enactments and images, which are imagined to be ghosts, in the dreams of the imagination or in the falsehoods of charlatans. ... I do not wish to deceive you; but I will astonish you."[262] With these words Paul Philidor, also known as Paul de Philipsthal, opened his Phantasmagoria show. The Parisian showman Étienne-Gaspard Robertson is most associated with the *Phantasmagoria*. He performed his ghost-shows in order to enlighten his audiences about the machination of the *Schröpfersche Geisterbeschwörungen*.[263] However, good showmanship required keeping the sources of projection-magic ambiguously hidden. The performers relied on stage props and installation techniques to bring their viewers into the right mood. Eckartshausen wrote "the viewers' imagination has to be heated up to the extend that they improve on the imperfections of the matter".[264] Even if your audience knows your show is a trick, it is crucial to divert their attention and have them look elsewhere at the right moment.

The key ingredient of the *Geisterbeschwörung* or ghost apparitions was a projection screen of smoke. At the time several books on natural magic gave detailed instructions on how to create the right amount of smoke out of pitch, how to adjust the smoke and direct the projection.[265] The biggest difficulty was to contain the smoke, because once the room is filled with smoke (and stench of pitch I assume) the image disintegrated; besides the spectators can endure a smoke-filled atmosphere only for a few minutes.[266] Projections onto amorphous surfaces have a limited readability; I imagine, slides used on smoke would have

262 Mannoni (2000) p. 144.

263 Smoke projections named after the necromancer Johann Georg Schröpfer (1730/1738-1774) who fell into ill-repute and subsequently committed suicide.

264 Translation S.E. Eckartshausen (1788) p. 135.

265 See Guyot (Year 7 of the French Republic) p. 254-255, Funke (1783) and Krünitz (1773-1858) Bnd. 65 p. 508, 514, 154.

266 "The smoke will spread in the room, which the eyes of the viewers will barely stand longer than 5 to 8 minutes. The apparition soon disappears because when the eyes of the audience is surrounded by smoke, the billow of smoke rising from the bowl will not stand out. Like a ray of sunlight in a darkened room, along with all the things hovering in the air, will be distinguishable, which does not happen if the whole room is illuminated by the sun." Translation S.E. Funke (1783) p. 154.



Image 56: *Phantasmagorie de Robertson dans la Cour des Capucines en 1797*, Frontispiece, Robertson (1831).

been distinct images, mainly human figures or faces.[267] A sales catalogue of 1803 advertised ghost machines called 'magic graves' (*Zaubergrab*) as elaborate ready-for-use machines. The glass slides had figures painted onto a black opaque background "through which the figures appear exceptionally clearly, and in which the circle of light which surrounds most glass slides is absent".[268] There would have been no halo of light or round frame, which would give the image away as a slide projection. Robertson improved the lantern projector by placing it on wheels. This way the image projection would slowly increase and, as film historian Laurent Mannoni points out, "[f]ar from being a harmless detail, this innovation undermined the frame, the perspective and the scenic space of the projection."[269] With figures floating in space and moving, projected devils, ghosts,

267 The most recognisable mark is a face: two black dots and some lines are sufficient for humans to see humanlike features: :-) Some suggestive talk by a magician and an audience can recognize any specific person in the mark: :o). Some experiments with projection on amorphous surfaces confirm this. Eckartshausen tried to create ghosts according to Guyot and Funk descriptions, yet found it difficult to make the smoke 'receptive' to projections. Eckartshausen (1788) p. 123.

268 Wälde (2008) p. 70.

269 Mannoni (1996) p. 393.

and skeletons appeared extremely lifelike – almost material bodies hovering in mid-air – charging at their audiences.

Philidor would end his shows "by evoking the devil ... he makes this distinguished gentleman appear sometimes with the face of [Philippe] Égalité, sometimes with that of Robespierre or Marat or Danton, but always with claws, horns and a long tail."[270] At the time some of these men were still alive and in power. Philidor was arrested for his provocative shows and in 1793, after his release, moved to London. A few years later Robertson also used the fresh memories of the revolution, however by that time political tensions probably had calmed down. He staged his *Phantasmagorie* in a former convent, leading his audience past a graveyard through a room full of scientific mysteriously sparking machinery into what looked like a chapel. Memories of the reign of terror were still fresh. The Capucine convent was located in the *section des Piques* named after the bloody pikes of 1792.[271] It was in the heightened climate of terror that the horror projections celebrated their biggest successes. After 4 years the show at the cloister closed.

Robertson may have been one of few lanternists who made some lasting wealth for himself. Philadelphia's career had stagnated after the debacle at Göttingen. The libel of Lichtenberg had spread far and wide. Philadelphia returned to his native town Wulfen and became the *parnas*, the trustee, of the local Jewish congregation.[272] He lived on in illusionists who followed and took his name. Philidor celebrated a period of great successes at the London West End, yet by the end of the first decade of the 19th century smoke projections had lost their pull. The lantern became parlour room entertainment, and Philidor was again a struggling traveling showman.

All three showmen Philadelphia, Philidor and Robertson projected onto invisible screens. Philadelphia still presented a magical science, Robertson claimed to expose magic with the help of science. The sense of reality had shifted from belief to suspension of disbelief. In a timespan of less than 50 years the art of projection went from magic to exposing the trickery of 'so called magic'.

Image 57: Fantasmagoria slide, early 19th century.
Centre National du Cinéma et de l'image animée dépôt à la Cinémathèque française.

270 Mannoni (1996) p. 396.

271 Annwn (2008) p. 63.

272 Jütte (2007) p. 41.


15


ממתו ם
נ נקפ י
א אלר ע

4. An Image Tradition
Historical Examples of Projection

Image 58: Rembrandt van Rijn, *Belshazzar's Feast* (detail) 1635-1638. National Gallery, London.

La nouvelle qu'icy j'avance,
N'est pas grandement
d'importance ;
Mais le récit que j'en ay fait,
C'est pour la rareté du fait :
Cette Magie est innocente,
J'en sçay la finesse excellente :
Mais me piquant d'être discret,
Je n'en aprens point le secret. [273]

Jean Loret, 1656

……..

273 Loret (1877) p. 192.

Reflection of light

In the painting *Belshazzar's Feast* (1635-1638) Rembrandt van Rijn has shown the effect a projection can have on media-illiterates. The painting depicts the Chaldean king shocked by an apparition on the wall: "the fingers of a human hand emerged and wrote opposite the candelabrum on the plaster of the wall of the king's palace, and the king saw the palm off the hand that was writing".[274]

"וישרפו, לקת, אנם, אנם"

[275]

In the story from the *Book Daniel*, the king immediately calls for his necromancers and astrologers to help him understand the ominous image. Also Daniel is called, who tells the king his days are numbered and all is lost – soon after, the king is killed. So far the story. Technically the appearance of the hand writing on a wall can be explained as a simple image projection – using a mirror and sunlight, at least this is what historian



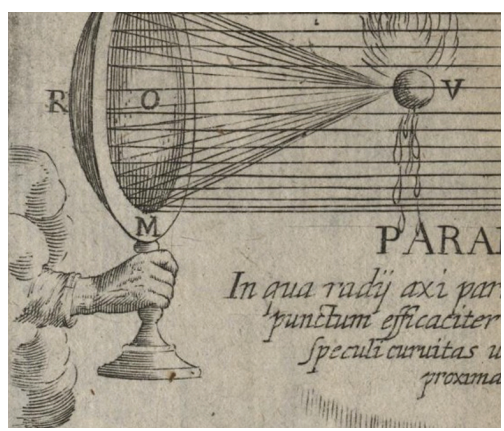


Image 59 (left): Rembrandt van Rijn, *Belshazzar's Feast* (detail) 1635-1638.
Image 60 (right): Kircher (1646) p. 882.

Hermann Hecht proposed.[276] Chinese magic mirrors are the oldest preserved example of the technique. The reflection of strong sunlight casts an image projection.

274 Torah, Daniel, Ch 5.5.

275 Mene, Mene, Tekel, Upharsin. The Jewish encyclopedia gives the following translation: "the author chose words which had a double meaning and ... Daniel, accordingly, gave the king a dual interpretation, applying both meanings of the words. Thus he interpreted *Mene* as 'to count' and 'to finish'; *Tekel*, to 'weigh' and 'to be wanting'; *Uparsin*, 'to divide' and 'Persia'". http://jewishencyclopedia.com/articles/10678-mene-mene-tekel-upharsin (accessed on 6.1.2015).

276 Hecht (1984) p. 2-6.

In case of the Chinese mirror, the projection resembles the image on the back of the mirror, as if the mirror were magically transparent. The 'magic' of the Chinese mirrors is said to be created by small unevennesses on the surface on the front of the mirror identical to the picture on the back.[277] The painting of Rembrandt shows a mirror that appears to have been sooted and letters were drawn onto it by clearing the surface. The 17th century Jesuit polymath Athanasius Kircher picked up on the mirror projector for one of his over thirty volumes of 'universal knowledge' and demonstrated how the mirror could find military applications. A hand extended from a cloud holds a parabolic mirror reflecting sunlight, either to send remote text messages, or to burn down the enemy fleet; remote warfare of 1646.[278] The text apparition of the Chaldean king, and Kircher's *steganographic* text projector, are fascinating examples of augmentations by means of projection. Both *technologies* added information to the space, yet the king and the scientist thought of the projection differently. To the Chaldean king the projection was a magical sign, to Kircher it was a secret yet pragmatic code in war.

Projection practices dating from before the cinema-era are rarely included in theories on projection art, at best they are mentioned in a footnote.[279] Yet, in my view early experiments with projections give evidence of a tradition of an expanded or augmenting approach to projection. Before projection became an immersive (cinematic) experience it augmented reality. The examples I give in the following were not intended as art, and I don't see the need to place them in an art-canon retroactively. Much the opposite, studying the various applications for projection may inspire unusual contemporary projection experiments.

In this chapter I take a tour of projection history from early technical descriptions of a projector by the 15th century Venetian magus Giovanni Fontana, to the late 19th century lantern lectures.[280] I will emphasize those projections which expanded into space '*performing*' their virtual images. I will consider how the reality

277 In China the 'magic' of the mirrors was less the fact that they projected text onto a wall, rather that they were considered to be magically transparent bronze mirrors. In bright sunlight the calligraphy on the back became visible as reflection on the wall – as if light shone though the bronze. The effect is described by Shen Gua, in his Dream Pool Essays, published in 1086. See Whitcomb (1988) p. 16.

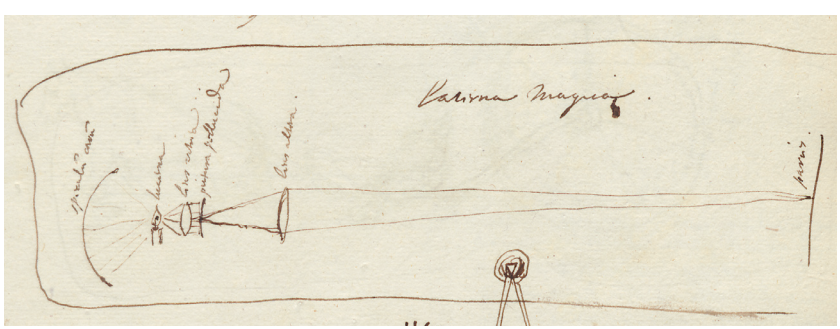
278 Kircher (1646) p. 882.

279 Oursler's *Timeline* and the book *Art of Projection* (2009) edited by Stan Douglas and Christopher Eamon are examples of exceptions.

280 A magus is a practitioner of astrology, alchemy and esoteric knowledge.

of projected images were represented and understood and what role the projectionist may have had in society. I do so by looking at images, contemporary reports, as well as at references to projections in fiction. I search to highlight a few historical moments of projection praxis that I as an artist relate to. What fascinates me is how projection machines were used in military feint attacks and at the same time as magical symbols in conjuring. It could be seen as a stage tool in theatre. Architects used projection technology in interior design, and projections were great advertising stunts in public space. All of these different projective interjections alter their surroundings by making it look strange.

When optical technology advanced in the 17th century, projection machines became viable tools. As said before, early modern projections were not immediately used as immersive screen projections. However, by the mid 19th century lantern lectures became a popular form of 'screen entertainment'. These technologically advanced slide shows were a premonitor to the cinema of the 20th century.[281] Even though the first film projections may have looked quite shady and grim in contrast to these slide shows, soon enough moving pictures as immersive projections were placed squarely onto the screen.

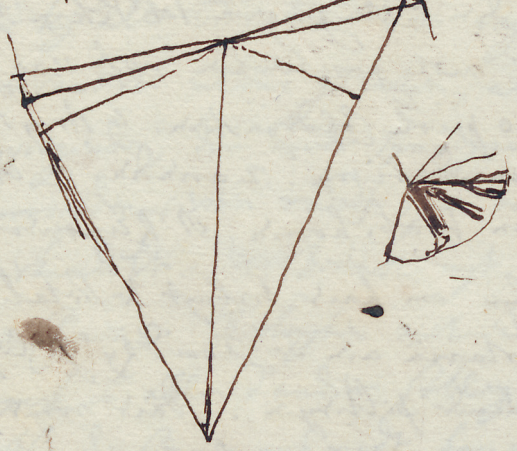


Development of a medium

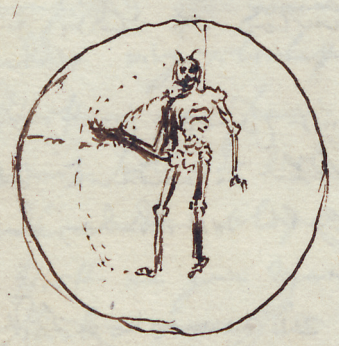
A very curious drawing can be found at the library of Leiden University. It is a small construction sketch of a projector by Christiaan Huygens. He drew a diagram showing how light from a candle, amplified by a convex mirror, directed through a set of lenses passed a glass-slide, projected an image onto a wall. A projection lantern,

281 In England powerful multiple lens projectors (biuniual or triunial lanterns) were produced, the elaborately crafted colourful slides were often animated and the stories that were performed absorbed their audiences. See http://www.magiclantern.org.uk/alphabet/alphabetab.php (accessed on 20.12.2014).

Image 61: Appendice II au premier Complément à la Dioptrique.
Image 62: Christiaan Huygens' sketches (1659), manuscript book A between feb 24 1659 and oct.11 1659. Leiden University Library.



pour des représentations
par le moyen de verres
concaves à la lampe



















or as he writes: Laterna magica.[282] An important factor for the improvement of projection technology was the growing lens making industry in 17th century Europe. New skills in lens making enhanced light refraction and optical amplifications. During its Golden Age, Holland was a centre for lens manufacturing and the city of Leiden had exceptionally skilled scientific '*instrumenten makers*'.



Image 63: Black lantern, about 1825, Gift of Mrs. Robert W. de Forest, Metropolitan Museum, New York.

Besides the sketch of a Laterna magica, on another page, Huygens had also drawn a series of apparently animated image slides for his projector. He noted: "For representations by means of convex lenses for the lamp".[283] His macabre projection would have shown a skeleton throwing its scull up and down. Christiaan Huygens appears to have thought of the projector as a mere triviality. He refused to build a functioning projector for his father Constantijn, who wanted to "play such puppets at the Louvre", at the French court, on one of his diplomatic journeys.[284]

Huygens is often credited with inventing the magic lantern around 1650.[285] Media theorist Friedrich Kittler acknowledges Christiaan Huygens' role in the product development of the magic lantern rather than it's invention.[286] Kittler suggested that the magic lantern is an adaptation of a dark lantern (a lantern

282 Christiaan Huygens' sketches (1659) Source: Leiden University Library.

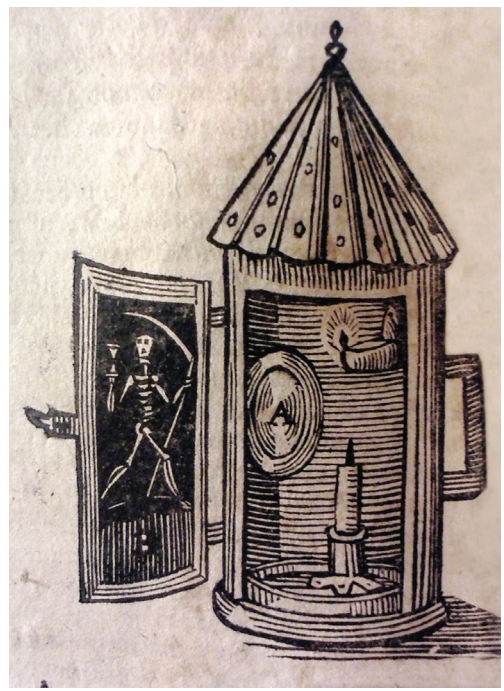
283 Huygens (1950) Manuscript A. p. 152.

284 "Puis que j'ay promis d'envoier la lanterne il faut qu'elle aille, car aussi bien ne scaurois je inventer d'excuse valable pour l'esquiver. Mais lors qu'elle sera arrivée si vous le trouvez a propos vous ferez aisement qu'elle ne puisse point servir, en ostant un des 2 verres qui sont proche l'un de l'autre, de sorte qu'il en demeurera encore 2 de reste, car il y en a 3 en tout. Je feray semblant d'ignorer ce qui y manque, et parmy ces eclaircissements il se passera du temps autant qu'il en faut. Et tout cecy pour le mieux; parce qu'il me semble que οὐ πρέπει à mon Pere de faire jouer de telles marionettes au Louvre, et que je sçay bien que vous ne seriez pas bien aise de l'y servir comme le cousin Micheli au Seigneur d'Aumale." A la Haye le 19 avril 1662. Huygens (1891). This story of Christiaan and Constantijn Huygens is described by Mannoni in great length. Mannoni (2000) p. 40-45. Compare also Terpack (2001) p. 297.

285 Willem Wagenaar makes such an argument. Wagenaar et al. (2014) p. 15, 21.

286 Kittler (1999) p. 85.

that can be dimmed with a sliding panel).[287] This lantern was a common tool and, according to Kittler, most useful to soldiers and thieves. By replacing the opaque sliding panel with a painted glass, the black lantern dazzled with images instead of strong light.[288] The two claims of origin do not necessarily contradict each other. There is a case to be made that there were various technological attempts to develop projection devices. The developments resulted from wide cultural practices.[289]



Another lamp that may have inspired the development of the magic lantern was the '*lantern vive*' – the spinning lantern.[290] Spinning lanterns were useful if not dangerous magician's tools.[291] Dangerous for the magician, or so goes the story of the performer of phantom plays called Batruni, who lived during the reign of Uthman ibn Affan (644-656).[292] Batruni demonstrated the *Moving Horse Lamp* in the courtyard of the mosque of Kufa (Iraq). He projected a monarch mounting his horse riding in circles, then a beheading that was reversed, and other such metamorphoses.[293]

Image 64: Simon Witgeest, *Het verbetert en vermeerdert natuurlyk Tover-Boek of t'nieuw Spel-Tooneel der Konsten (Amsterdam, 1695)* p. 64
Images 65, 66 (next pages): Giovanni de Fontana, *Bellicorum instrumentorum liber* (1420-1430).

287 Kittler (1999) p. 82, Liesegang (1926) p. 8.

288 Mannoni quotes a letter by a 17th century traveler Balthazar de Monconys from 1695 in which Monconys writes how he had seen in London :"[T]he effect of a dark lantern [lanterne sourde], which had a complete hemisphere of crystal [the condenser lens] of about three inches in diameter, and which could throw for a long distance the representation of objects which he placed between the light and this crystal, by means of a sheet of glass on which these objects are painted." Mannoni (2000) p. 47. Mannoni's book on the archeology of cinema gives a most detailed narrative about several key players in the technical development of the magic lantern, Mannoni's description compares well to Liesegang's booklet from 1926 that lists dates in the history of projection-art. Liesegang (1926).

289 Deac Rossell makes an argument against technological determinism in lantern history. He confirms Kittler's view that certain magic lantern models could have been made by reapplying an already existing object. Tin plate magic lanterns and black lanterns were made in the same region in south Germany. The tin-plate industry in Augsburg flourished and from the early 19th century onwards small mass-produced (sometimes hand-held) lanterns were shipped around the world. Rossell (2004).

290 Mannoni (2000) p. 28.

291 And maybe less precarious as sign boards for barbers and bakers. Ibid.

292 Hecht (1984) p. 3.

293 Butler (1993) p. 79.

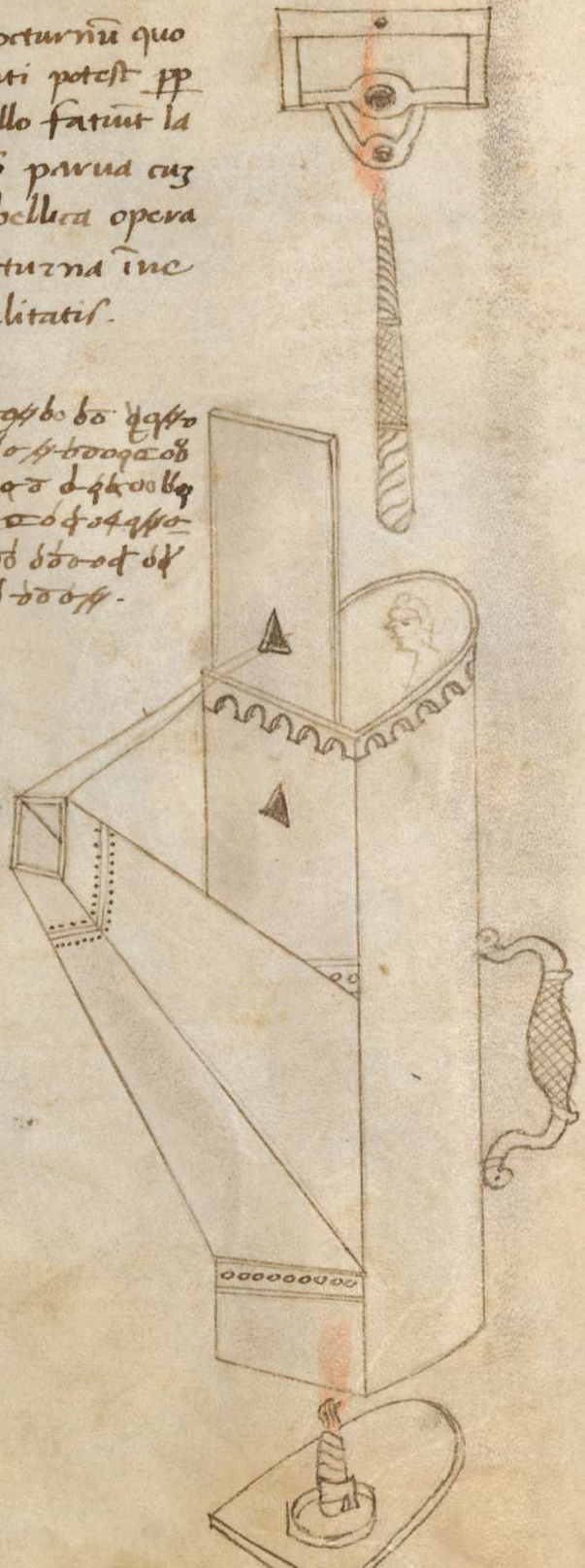


Apparentia nocturna ad terrorem
videntium



Iumināziū nocturniū quo
nemo anglic uti potest pp
mala que cū illo fiunt la
trones. Ego uō parua cuz
aditio ipz ad bellum opera
et propie nocturna inue
nio multe utilitatis.

A —





The 'magic' scared the onlookers so much that they denounced the magician as a sorcerer and had him beheaded. *The Moving Horse Lamp* could have been a lantern vive, similar to the lantern of Giovanni Fontana.[294]

According to media theorist Siegfried Zielinski the first image we know of a magic lantern was made in 1420. Giovanni Fontana drew a 'scandalous sketch' of a lantern projecting a she-devil (the she-devil has pubic hair, hence the scandal).[295] Fontana's drawing of the projected she-devil has following comment: "Apparentia nocturna ad terrorem videntium" – a nightly appearance to terrorize the onlookers.[296] The elaborate construction drawing shows a lantern that appears to throw light onto a tall tower. The front of the tower, depicted in detail with a large entrance, battlements, and several small windows, is lit in bright red. Noteworthy is the handle on the back of the lantern; it could have been used as a portable projector, an early '*palm-projector'* so to say. However, it seems unlikely that a lantern built according to this drawing would project a focussed image of large devils onto an eight or ten meter high structure. That said, to someone who has never seen a brightly coloured image projection, even a blurry shadow of a devil might have been terrifying. It was only when Huygens added stronger light (several candles or wicks and reflectors) and optical lenses (to focus the light and sharpen the projection) the lantern was not just a seductive idea, it became a very powerful tool.

294 Zielinski (2002) p. 161.

295 Ibd. For a much more detailed study on lantern illustration as well as lantern making see Rossell (2009) p. 15.

296 Fontana (1420-1430).

Image 67: Gevelsteen. Rapenburg 66, Leiden.



Image 68: Mechanical slide, Musschenbroek workshop, first quarter of the 18th century, Museum De Lakenhal, Leiden.

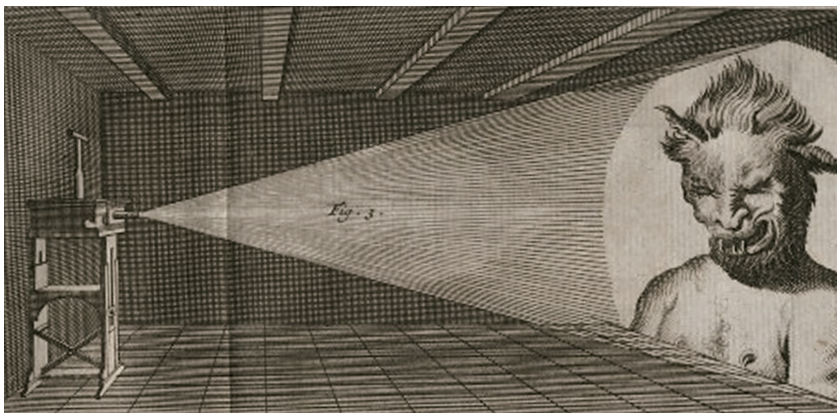
Such tools were built in 17th century Leiden. The house No. 66 at the Rapenburg, right across from the University *'Academiegebouw'*, has a notable '*gevelsteen*', a gable stone: *d'Oostersche Lamp* (The Oriental Lamp). In the late the 17th until the mid 18th century, this was the Musschenbroek workshop.[297] As the gable stone suggests, the Musschenbroek family were originally oil lamp makers. In the 17th century they became one of the leading scientific instrument makers in northern Europe. Highly specialised instruments were needed for new scientific methods of practical observation. Research institutes of experimental physics were established all over Europe and universities, scientists, and collectors from far across the borders were buying instruments in Leiden. One of Musschenbroek's main clients was, not surprisingly, the Leiden University, where some of the exceptional objects still remain.[298] Among high-tech science machines Musschenbroek also produced magic lanterns. The projector had a set of three lenses and would, at a distance of twenty feet (six meter), project a bright image six feet (1,80 meter) tall.[299] The rather sturdy machine came with artful, sometimes mechanical, lantern slides, which could project animated images. The slides were custom made and painted according to the uses and desires of the buyer. If we judge from the slides that can be found in the collection of the Rijksmuseum in Amsterdam and Museum de Lakenhal in Leiden, subjects included travel, history and mythology, science, comedy, horror, and pornography.

297 For a detailed history of the Musschenbroek Instrumentenmakerij see de Clercq (1997).

298 Museum Boerhaave at Lange Sint Agnietenstraat 10 in Leiden.

299 Musschenbroek writes in a letter in 1696: "quand on est 20 pied de la muraille les figures presentent bien 6 pied grand" de Clercq (1991) p. 102.

The projector with a set of slides made by the Musschenbroek workshop cost around fifty guilder; close to the monthly salary of a professor back then.[300] Leiden University still owns a lantern built by Musschenbroek; 'de *toverlantaarn van 's Gravesande'* was maybe named after its theoriser rather than its builder.[301]



Development of a practice

Projections had the potential to exhibit wondrous things never seen before and engage in rational science alike. Nonetheless, the lantern, although quite obviously entertaining, did have an ambiguous reputation. 's Gravesande noticed how 'optical writers', scientists, did not take the magic lantern too serious.[302] The reception of the lantern might be seen as symptomatic of the struggle going on in natural sciences. Scientists were developing academic standards; enlightened scientists were breaking with alchemist, occult and astrological traditions. Europe was in a war on religious supremacy; it was a struggle of ideas and world views.[303] For instance in a letter to Constantijn Huygens, written in 1643, René Descartes ridicules the Jesuit

300 de Clercq (1991) p. 112.

301 The toverlantaarn van 's Gravesande is on permanent display at the Museum Boerhaave in Leiden. Willem Jacob 's Gravesande, a professor at Leiden University, introduced the slide projection as a lecture tool. In his book on mathematics, 's Gravesande describes the 'strange phenomenon' of the magic lantern in technical detail, yet we can only speculate which 'useful and pleasant Spectacles' were presented with it or how did he possibly use the lantern in his teaching. 's Gravesande (1725) p. 77 [645].

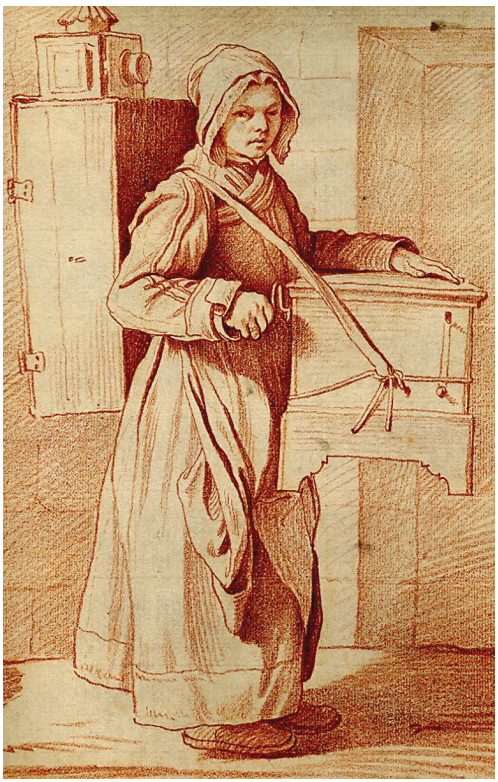
302 's Gravesande (1747) p. 231.

303 Treaty of Münster 1648 ended 80 year war, which was among other things a war on religion.

Image 69: Illustration of the magic lantern, *s' Gravesande* (1725) p.77/ 645.
Image 70: Anonymous, *Actieuse Nacht-Wind-Zanger met zyn Tover Slans*, Het Groote Tafereel der Dwaasheid, 1720. © Trustees of the British Museum.

Actieuse NACHT-WIND-Zanger met zyn Tover Slons





Athanasius Kircher for being 'more of a charlatan than a scholar'.[304] Kircher wrote on all thinkable subjects by gathering information in large illustrated volumes. He published an early technical description of the magic lantern and was often falsely credited with the invention of the *'laterna magica'*. Kircher may have seen the lantern's potential for Catholic church propaganda; the terrifying projections could frighten people into submission.[305] The projection lantern ended up on the occult side of the argument, it ended up in a mess, as film historian Laurent Mannoni puts it.[306] Even the name that was given to the new optic device reflects this: magic lantern, *'lanterne de peur'*, '*toverlantaarn'*, '*Zauberlaterne'* or even '*devil lantern'* – not 'lucerna artificiosa', 'lanterne dioptro-catoptrique', 'mégalographique', or simply image projector.[307] Nevertheless, the shady name did not put an end to the popularity of the instrument.

During this early phase of the medium different people were interested in the technology for a wide array of reasons. Magicians, teachers, and savoyards, necromancers, scientists, con-men, and priests – they each understood the projected image distinctly different. It was tested as a tool in warfare, propaganda, experimentation, entertainment, trickery, and subversion. On one side there were enlightened uses of a new optical tool and on the other magic demonstrations making the invisible visible in *mimetic sympathy* or as *analogical demonstrations* to recall Koen Vermeir.[308] Established powers or marginalized people developed very different modes of projection. In the next few

304 Mannoni (2000) p. 37.

305 Kittler (2010) p. 80.

306 Mannoni (2000) p. 67.

307 Names applied by Kircher and mathematician Johann Christoph Sturm. Mégalographique put in words that the device projected a fly and made it into an elephant. Compare: Mannoni and Pesenti-Campagnoni (2009) p. 47.

308 Chapter 1.

Image 71: *Lorge de Barbarie, Cris de Paris*, Red chalk, print studies, Edme Bouchardon, 1730s. © Trustees of the British Museum.

paragraphs I retrace some developments of projection practices and the scope of projection technology.

Projections in warfare

In the letter I quote at the beginning of this chapter, Jean Loret describes, with some sense of irony, what presumably was a '*camera obscura*' projection.[309] Magical projection was at best put down as trivial entertainment and innocent child play. Loret admonishes some secrecy, presumably not to spoil the fun. Kircher saw more danger in projection: "By this art impious people, painting a picture of the devil on a mirror and projecting it into a dark place could easily force people to carry out wicked deeds."[310] The effect of the magical illusion apparently was thought to depend on some ignorance on part of the audience; when projecting apparitions to the unsuspecting or media illiterate viewers, the lantern could be used in psychological warfare instilling fear of devil warriors, or multiplying legions of soldiers. In the 18th century Abbé Nollet thought of a rather large desktop tent-style camera obscura that could be a surveillance machine.[311] He wrote: "This kind of black chamber could be use [sic] to see what is happening outside of a fort under siege, without exposing one's head; because nothing prevents the table, on which the image is projected, from being placed behind a rampart with the mirror raised above it."[312] Other military uses of projection were the before mentioned mirrors

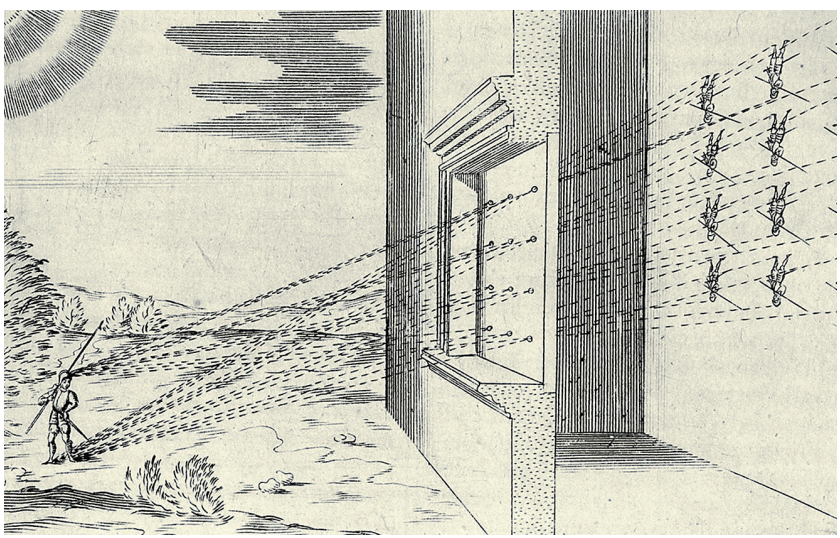
309 He wrote: "Mais ce qui me mit en sursaut, C'est qu'ils avoient les piés en haut"; (without a lens to turn the image, a camera obscura projects the outside reflected head down into the room). Loret (1877) p. 192.

310 Gorman (2007) p. 47. Kittler appears to use a different translation of the same sentence: "Through this art, Godless people could easily be prevented from committing many vices/ if the devil's image is cast onto the mirror and projected into a dark place". Kittler (2010) p. 80.

311 Kepler was credited with the portable 360° panoramic camera obscura. Sir Henry Wotton writes to Francis Bacon: "He hath a little black tent which he can suddenly set up where he will in a field, and it is convertible ... to all quarters at pleasure capable of not much more than one man, as I conceive, and perhaps at no great ease; exactly close and dark, save at one hole, about an inch and a half in Diameter, to which he applies a long perspective-trunke, with the convex glass fitted to the said hole, and the concave taken out at the other end, which extendeth to about the middle of this erected Tent, through which the visible radiations all the objects without are intromitted, falling upon a paper, which is accommodated to receive them; and so he traceth them with his pen in their natural appearance, turning his little Tent round by degrees, till he hath designed the whole aspect of the field: this I have described to your Lordship, because I think there might be good use made of it for Chorography [the making of maps and topographical views]: For otherwise, to make landskips by it were illiberal, though surely no Painter can do them so precisely". Wotton (1651) p. 413-414. For a detailed summery of applications of the camera obscura see Wenczel (2007) p. 13-30.

312 Gorman (2007) p. 46.

Athanasius Kircher described in his book *Ars Magna Lucis et Umbrae* (1646). In his book Kircher recalled the siege of Syracuse when the Greek mathematician Archimedes set the enemy fleet on fire using burning glasses.[313] He also described how a city under siege could use mirror projections to transmit orders at far distances. Complex instructions could be passed-on using concave mirrors with an alphabet written on them. Messages of Kircher's '*stenographia*' could not easily be intercepted or disturbed by the enemy. The technology had the potential to reach



populations far and wide; with advanced mirrors it could be possible to project all kinds of stories using the moon as a screen.[314]

Propaganda and advertisement

Kircher saw the potential of the magic lantern in propagating divinity. According to Kittler the Catholic church was keen on the new medium as a propaganda machine.[315] The struggle for religious hegemony during the 17th century was also a struggle of media. The printed word was the revolutionary new medium of the reformation, the counter-revolution armed itself with magical apparitions

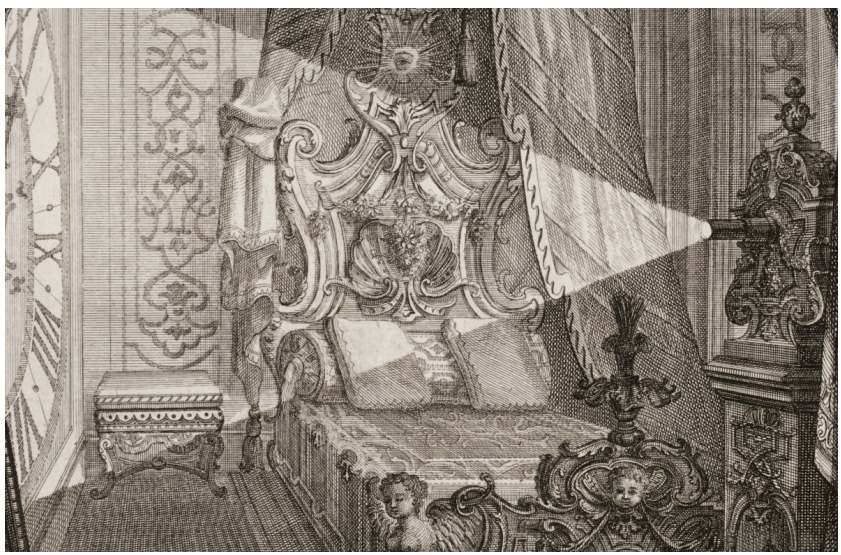
313 Kircher apparently tested the burning glass in an experiment. Zielinski (2002) p. 32.

314 Zielinski (2002) p. 183.

315 Kittler (2010) p. 80.

Image 72: Camera Obscura, image from: Bettini, Mario, *Apiaria universae philosophiae mathematicae* (Bononiae (Bologna): J. B. Ferronii, 1642) p 38.

as well as theatrical spectacles.[316] Jesuit drama were elaborate Baroque theatre shows with religious subjects used to spread Catholic doctrine during the counter reformation.[317] The Catholic church thought devices such as the magic lantern would reinstill fear of the devil.[318] Kircher appears to have experimented with the magic lantern; he installed a 'black box' screening room in his Roman Museum *Kircherianum.* He named the projector thaumaturga – miracle worker (θαῦμα thaûma, = miracle).[319] However, there is little evidence of a large scale use of



the projector by the church, possibly the optical novelty was still too costly and Athanasius Kircher did only frighten a few cardinals with these rare machines.[320]

Image 73: Johann Jakob Schübler, Plate 3 of 6 from a set of beddesigns. Augsburg, before 1748. Victoria and Albert Museum, London.

316 I.e. the Jesuit Drama and Baroque passion plays like the *Theatre of the Holy Sepulchre* (1751) which is on display in Neuzelle, Germany.

317 Zielinski (2002) p. 156.

318 In 1622 the Vatican installed the "Congregatio de propaganda fidei" to spread the Catholic dogma. Kittler (2010) p. 76.

319 Clark (2007) p. 103. Some claim Kircher got to know about the 'lantern of fear' from mathematician Thomas Rasmussen Walgensten. In 1670 Walgensten performed before the Danish King Frederik III who died few days later of a heart attack. Heard (2005).

320 Lange-Fuchs (2005) p. 155. Physician Pierre Guisony wrote to Christiaan Huygens on 25 March 1660 that if Athanasius Kircher knew about the magic lantern, "he would thoroughly frighten the cardinals with ghosts." Heard (2005).

Projection technology sparked most curious ideas. Like Kircher, the occult writer Heinrich Cornelius Agrippa von Nettesheim proposed sky-projections. In 1531 von Nettesheim described the possibility of projecting signs onto the lunar disk.[321] As a public medium, projection lend itself to addressing large audiences. It was not in church propaganda or warfare but advertisement that strong projectors were being applied; by the late 19th century large outdoor projections became actually viable with new light technology. For instance, the American showman Buffalo Bill, when touring England, advertised his Western show with the enigmatic proclamation of 'BUF' onto the clouds (FALO BILL'S WILD WEST got lost in the sky).[322] However, critics were apprehensive about sky advertisement and dreaded seeing glowing pictures of suspenders or the latest thing in ladies corsets up in the sky.[323] In 1894 the British government restricted public advertisements after Nelson's Column, a monument in central London, had been used as a screen for magic lantern projections marketing some pill.[324] Curiously enough some 100 years later projections on Trafalgar Square caused another public outcry. In this case the projection was not an advertisement but a work of art. In 1984 Wodiczko projected a ballistic missile onto the column, as well as a swastika on the South African Embassy across the street.

Universal exhibitions

In 1695 the philosopher Gottfried Wilhelm Leibniz wrote a short piece titled *Drôle de Pensée*. [325] In this text Leibniz sketches out an enterprise in which the magic lantern plays a small yet significant role. He proposes a universal exhibition of modern

……..

321 Although Nettesheim did not reveal the technology. Gorman (2007) p. 43.

322 Marvin (1987) p. 267.

323 Ibid. Cloud projections were a wonderful idea but had their biggest success in fiction: 'The Bat Signal!'. The bat signal first appeared in *Detective Comics, Issue* #60, February 1942, although the idea of a searchlight projection in form of a bat might be taken from the 1920s silent movie "the Bat" by Roland West. This film noire, a crime story, used projection and shadow deceptions as a tool of suspense. The origin may be the death ray by H. Grindell-Matthews which was supposed to be a particle beam with potential as military application. It never developed into a working model. Anon. (1928) p. 22.

324 Marvin (1988) p. 182.

325 Gottfried Wilhelm Leibniz, "Drôle de Pensée, Touchant une nouvelle sorte de Representations"1695. http://abu.cnam.fr/cgi-bin/go?drole2 accessed on 27.7.2013. Compare: Rossel (2002)b. p.25-26, Bredekamp (2004) p. 237.



Image 74: Samuel van Hoogstraten, *De groote schouburgh der Nederlantsche konstschilders en schilderessen* (1718-1721) p. 260.

inventions, industry and art.[326] In this handwritten document he argues for the need of patronage, lists the attractions that would be displayed and the benefits of such an enterprise. Leibniz imagines sculptors, painters, watchmakers and carpenters to be on the payroll, as well as mathematicians, architects, charlatans, musicians, booksellers and publishers. He planned a wide variety of novelties and amusements, like fireworks, artificial animals as well as exotic live ones, latest technologies of warfare, a miniature naval battle, rare musical instruments, fake jewellery, comedies from India, Persia, Turkey, technical explanations, lectures and discussions, magicians, fools and the fire-eater from London (if still alive).[327] This very first *world-fair* was to serve many purposes: it would open people's eyes to the new sciences, it would be of commercial benefit, at the same time it would entertain, deceive and trick. And in

326 Ibid.

327 Les personnes qu'on auroit à gage, seroient des peintres, des sculpteurs, des charpentiers, des horlogers, et autres gens semblables. On peut adjouter des mathematiciens, ingenieurs, architectes, bateleurs, charlatans, Musiciens, poëtes, libraires, typographes, graveurs, et autres, le tout peu à peu et avec le temps. Les representations seroient par exemple des Lanternes Magiques ; (on pourroit commencer par là) des vols, des meteores contrefaites, toutes sortes de merveilles optiques. Leibniz (1695).

all this the magic lantern was to be the theatrical opening act.[328] Leibniz described a gigantic '*Wunderkammer'* for the good of all.[329] Art historian Horst Bredekamp summarises the unusual text as a breathless confusion which nonetheless appeared to have been put together carefully. Bredekamp summarises Leibniz' idea of a public presentation of curiosities as a playful burlesque approach to sciences with a Baroque sensibility for the theatrical.[330]

Entreatments by 'Orientals' and Gothic projections

One group in Europe which added the lantern to their performance repertoire was 'das sogenannte fahrende Volk': travellers.[331] Kittler mentions them in his history of optical media, however he does not further specify the origin and sociology of this group. These travelling lanternists may have had only little impact on the technical development of projector-machines as such, nevertheless they made the lantern widely popular, and impacted the reputation of the magic lantern. '*Galantee'* showmen performed on fair grounds or private homes. The lantern showmen of western Europe were associated with poor travelling migrants from the south: from the south of the Netherlands (Luikerwaalen), south of France (Savoyards), Italy or even further. The travelling show-folk and conjurers were often regarded as

328 Deac Rossell points out Leibniz imagined animated lantern projection, not just simple things painted onto glass, representing "quite extraordinary and grotesque movements, which men would not be capable of making". "Pour les lanternes magiques, on auroit non seulement des simples choses peintes sur du transparent, mais démembrables, pour representer des mouvements bien extraordinaires et grotesques, que les hommes ne sçauroient faire." Leibniz (1695). Rossell deducts from this written document of 1695 that magic lantern projections have included movement and not simple static images long before the 19th century early cinematographic experiments. Rossell (2002)b. p. 25-26.

329 Leibniz may have been expanding this idea after experiencing Paris' play-palace's on the Foire, the annual fairs, that were a common entertainment for a large public. The fairground could be a combination of commerce and entertainment linked to a religious festival.

330 Bredekamp (2004) p. 45-47. The concept of burlesque science may be alien from the perspective of todays sciences, then again the World Expo's are still touring the globe bringing together science and technical developments as entertainment, commerce and displays of national pride.

331 Kittler (1999) p. 99.

disreputable and subversive.[332] This opinion is reflected in some of the depictions of the magic lantern performers of the time. However, we have very little written records on their craft and methods as projectionists.



More has been written by and about '*gentleman performers*' of the 18th century.[333] Some of these gentlemen have gone down in history as tragic con-men, like the necromancer Johann Georg Schröpfer (1730/1738-1774). He performed seances in a transformed billiard room of his coffee house in Leipzig, as well as at various courts of Europe. When facing bankruptcy he committed suicide after letting his creditors know the hour of his reappearance. Another such adventurer was the celebrated occultist Jospeh Balsamo known as Alessandro Count de Cagliostro (1743-1795). He eventually fell victim to the inquisition of the Roman Catholic Church.[334] To both, Schröpfer and Cagliostro, the magic lantern was a small tool in all encompassing grand deception. At the time there was a wide interest in necromancy and orientalizing rituals. A whole literary genre emerged from the interest in occult 'sciences', forbidden arts, and diableries; the gothic fiction of authors like Horace Walpole (*The Castle of Otranto*, 1764) and Ann Radcliffe (*The Mysteries of Udolpho*, 1794).

Image 75: Eckartshausen (1788) Ta III, p. 72.

332 Foreign performers were also common to England, where it was said that they were recent migrants to England and the rest of Europe. According to a 17th century author of a book on Juggling and slight of hand, the 'Egyptians' invaded England in the 16th century "having been banished from their own country, and excelled in quaint tricks and devices." Crofton (1888) p. 8 Public opinion of the time regarded the show-people with much reservation; Historian Barbara Stafford writes "Gypsies ... embodied the criminal antithesis of *authentic* performance, the satanic inversion of bourgeois respectability ... The Gypsy – like the sorcerer, witch, or quack – belong[ed] to the worldwide network of conjure, i.e., those alternative cultural practices that challenge authority" [emphasis S.E]. Stafford (1994) p. 82-83.

333 See insert 3 and 4.

334 The adventures and misfortunes of Count de Cagliostro were the subject of literature and tabloid journalism of the day. Most prominently the affair of the diamond necklace in 1780 involving Queen Marie Antoinette.

An example of gothic fiction that is especially relevant with regard to projection is the story *Der Geisterseher* (1787-89) by Friedrich Schiller, which was originally published in the newspaper Thalia as an instalment piece and was widely read at the time.[335] The title figure may have been largely based on Count de Cagliostro.[336] Schiller tells the story of a Jesuit secret society that tries to convert a young protestant prince in order to enlarge its power. To win over the melancholic prince they enwrap him in fictions using all sorts of projections. Schiller's interest in the occult and counter-currents to the churches, like the Rosicrucian and Freemasons (or Bucentauro, how he calls the brotherhood in the *Geisterseher*) can be seen as a response to the Enlightenment.[337] It is possible that Schiller initially attempted to come to terms with various influences, like his friends Gottfried Körner's freemason liberalism, and his own temporary fascination with mysticism. Nevertheless, Schiller also saw how Gothic literature was playing to a popular taste for terror and horror. Schiller used projection as a metaphor for all that is obscure and 'wrong way round'. These ghost tales may have been a way of grappling with the friction between persisting believes in the supernatural and enlightened rationalism.

Projection as education

From the mid 19th century onwards, 'professor'-projectionists used powerful projectors with large collections of photographic slides. Limelight, a new light technology, made bright projections for large audiences possible. One of the most prominent locations for educative lantern shows, The Royal Polytechnic Institution in London, was a combination of lecture room, museum and magic stage-show. The Polytechnic opened in the 1830s. It was to be "an institution where the Public, at

335 Schiller (1954). An English translation appeared in 1800: '*The Armenian; or The Ghost Seer. A History Founded on Fact*'. Schiller never completed the work which from a formal perspective he himself appeared to value little, the unsuspected success of the story greatly disconcerted him. Schiller (1847).

336 The scheming impostor of obscure birth was a recurring trope in the literature of the time and may have been largely based on figures like Count de Cagliostro and Schröpfer. In Ann Radcliff's *Mysteries of Udolpho* the deceitful villain is posing as an Italian noble man. Alexandre Dumas (1802 – 1870) used Cagliostro as a model for several of his characters and the affair of the neckless as the key plot of *The Three Musketeers*. Dumas sketched Cagliostro as a pitiable orphan gypsy boy who grows up to become a famous conjurer. Also Goethe went to great lengths researching the story of Cagliostro. He was so keen on exposing the man as a fraud that he disguised himself as a friend and lawyer gaining access to the Balsamo family in Palermo. Goethe later published the letters which Cagliostro's mother entrusted him with to forward to her son. The outcome of this underhanded research was *The Mystified*, which Goethe later reworked into one of his least popular plays *Der Groß-Cophta*'(1791).

337 Müller (1954) p. 679.

Image 76: Mr. Muybridge showing his instantaneous photographs of animal motion at the Royal Society, The Illustrated London News, No. 2614-Vol. XCIV, May 25, 1889.



little expense, may acquire practical knowledge of the various arts and branches of science connected with manufacturers, mining operations and rural economy".[338] The science lectures, quite like its sister the universal exhibition, advertised and spread the ideologies and products of industrialised Europe and America. By the end of the 19th century lantern lectures were an established form of educative entertainment and a way to propagate various technical advancements as well as colonial and religious endeavours.[339] Slide shows were taken to Africa and Asia by Christian missionaries and in return exotic oriental travel stories toured Europe and North America. A handbill at the time advertised a slide-show as "an evening's entertainment that is worth a college course... and EQUAL TO A TRIP AROUND THE GLOBE".[340]

In this chapter I looked at a number of fields applying projection technology. Initially the lantern may have been used to interject images into reality, by the mid 19th century, the projection was contained on a screen and the projected reality was seen as something wondrously separate from material reality. In almost 500 years, from the sketch made by Giovanni Fontana in 1420, magic lantern projection found many interpretations: as war machinery, propaganda medium, visualisation and stage machinery, street entertainment, child play, scientific instrument, occultist and conjuring machine, tool in disproving magic or lecture device and cinema projector. Before projection was unequivocally associated with cinema, it could be seen as magic and it's critique at the same time. I.e. Phantasmagorist Paul de Philipsthal claimed to enlighten and astonish his audience with his projections not deceive with imagined ghosts "in the falsehoods of charlatans".[341] As Tom Gunning writes: "a direct and overwhelming appeal to the senses on the one hand, and the critique of illusion on the other. The critique seems to carry on the Enlightenment project, while the sensual approach often questions the powers of the rational

338 http://www.wiut.uz/en/partners/uow_history/ (accessed on 25.4.2014).

339 Vermeir (2005) p. 159. A famous 19th century lantern lecturer was Eadweard Muybridge touring Europe and the USA with his Zoöpraxiscope.

340 Magic Lantern Show Publicity Handbill: Grand Magic Lantern Exhibition (around 1880), University of Exeter. A Youtube video of one of Willem Wagenaar's lantern demonstrations gives an impression what a lantern lecture could have looked like. Teylers museum in Haarlem, 16 Sept 2007. https://www.youtube.com/watch?v=WuvkQ5vZFJo (accessed on 18.12.2014).

341 Mannoni (2000) p. 144.

mind and circumvents rather than demonstrates its power."[342] Projection was an ambiguous medium and often used in a playful subversive manner.

To briefly recapitulate: what is my fascination with these early projection practices? Contrary to classical cinema, which produces self-contained worlds on screen, the projection practices I mentioned expanded into the world of the viewer. The phantasmagoria, celestial projections, stenographia, Moving Horse Lamp, Schröpfersche Geisterbeschwörungen, lantern vive are all examples of augmenting projection. There is no history of projection art that lauds Giovanni Fontana as the Giotto of projection. Yet I should like to appropriate these early experiments with projection as part of the image tradition I work from. And I see todays influx of projection and virtualization in the context of that history. When looking at the history of projection from the perspective of augmentation it appears as if the 'century of cinema' has been a brief interruption in an enduring praxis of augmenting (or expanding) image projection.

Projection technology necessarily plays a significant role in my own work. Besides the projector as a display technology, I use the projector in the process of creating a work. I tinker with light, reflection, shadow in interaction with objects and space. What attracts me to projection is the ambiguity of the medium and its playful and subversive qualities.

342 Gunning (2009) p. 30.



Two PUBLIC projections in Ireland:

The Virgin of Knock and the Jubilee protest



On the 21st of August 1879, 15 villagers living around the chapel of Knock saw Mary appear in a halo of light. Some months later the witnesses were interviewed in an enquiry. In large parts the accounts were coherent, however, not to the smallest detail. Dominic Bryne remembered: "At the time it was pitch dark and raining heavenly [sic.], and yet there was not one drop of rain near the images."[343] One father remembers his small son talking of seeing a bright light. So did another man who had seen the light from some distance. When Margaret Byrne went to the chapel to lock it she "saw something luminous or bright at the south gable, but it never entered my head that it was necessary to see or enquire what it was."[344] When she returned some time later she saw the Virgin. Patrick Hill's account gives a small clue to the materiality of the apparition: "At times she appeared ... I saw them move .. one old woman went up and embraced the Virgin's feet, and she found nothing in her arms and hands; they receded, she said, from her."[345]

There is little proof that Maria appearances, common in the 19th century, were brought about with the use of image projectors. Yet historian Paul Carpenter has developed the argument that, in the case of the appearance of the Virgin on the church wall of Knock in 1879, this was most likely the case.[346] Carpenter found proof of lantern experiments taking place at Knock around the time of the apparition. He suggests that "due to the witnesses' lack of

Image 77: *'Ghosts'*, Lantern slide, 1790-1830, collection Museum Rotterdam.
Image 78: Apparition projected through church window. Unknown source.

343 The official testimonies of the fifteen witnesses. http://www.knock-shrine.ie/witnesses-accounts (accessed on 25.9.2013).

344 Ibid.

345 Ibid.

346 Carpenter (2011) p. 102-120.

comprehension for the sensory-mediated technology of modernity, they would not have recognized the lantern's projection as a copy".[347] Or, in other words, Carpenter says the Irish villagers lacked media literacy and were not able to decode the projection as a virtual image. He argues that, what was described by the onlookers as one event actually took place on two different occasions. Two disturbing novel experiences: One, the ephemeral projected entertainment, and second, the lighting up of the gable of the chapel by a strong lamp. In the late 1870s strong bright lights could have been gas lanterns, even electrical light. Either lamps would have been as much a novelty as a magic lantern projection to the inhabitants of Knock during times of great poverty.

A few decades later another remarkable outdoor projection took place. In protest to the 1897 diamond jubilee of queen Victoria, Maud Gonne and other Irish nationalists projected image slides of evictions and house demolitions, as well as statistics of starvation and portraits of people who had been executed by the British.[348] It was the time of the *Land War*, a period of civil unrest as a result of the British occupation and disputes over land ownership in Ireland. Irish farmers opposed their grave conditions inflicted by the British colonisers. The poet, and Gonne's close friend, W.B. Yeats made an entry in his autobiography



Image 79: Robert French, "The Battering Ram has done its work" [Eviction scene, Ireland], between 1880-1890, National Library of Ireland.

347 Ibid.

348 Cullen (2002) p. 163.

of the jubilee protests.[349] On the evening of the queen's anniversary the activists had set up a projector at the National Club in the centre of Dublin and beamed disruptive images of recent violent incidents from the window.A crowd gathered to see the novel technology projecting large images. Soon enough the police turned up to stop the 'anti-imperialist action'.[350] Gonne's transient street protest was part of her larger political engagement. According to art historian Fintan Cullen, Gonne's use of "Photographic evidence of these eviction atrocities was clearly important to her; she used to refer to the slides as her 'documents' to prove her point about the power of landlordism".[351]

The two public demonstrations, in Knock and at the National Club, were of a very different nature, one was soliciting belief, the other understanding. Yet, they were taking place during the same political conflict. And, I would like to suggest, are both examples of projections as political agitation. In her struggle for Irish independence Maud Gonne used the slide projections as evidence. Her intention was to educate as many people as possible about the effects of British imperialism. In Knock the projections were understood as something magical and spiritually transformative.[352] The projection was intended to affirm the belief of the villagers, and there was good reason to do so. In 1879 unrest in Mayo county turned against the parish priest of Knock, the Archdeacon Cavanagh. He had sided with the British authorities and the landlords, denouncing the rebels. What better way to distract from the unrest than a celestial apparition of the Holy family.[353]

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349 Ibid.

350 In his autobiography Yeats does not mention the projection. Yeats (1999) p. 277.

351 Cullen (2002) p. 168.

352 The Catholic church proclaimed the authenticity of the apparition. In the 20th century Knock became a place of pilgrimage and a huge commercial success to the Catholic church. In the 1980s the parish priest James Horan lobbied for an airport to bring in the steady stream of visitors (in its heydays one and a half million). Knock International Airport was built in 1985.

353 *Is There Anybody There?* dir. by Christopher Hale (UK: Channel 4, 1987). Presenter Nicholas Humphrey suggests that the magic lantern was placed inside the church and the projection redirected onto the gable by a mirror. He recreates the set up to show how it could have been done.



Conclusion
The Magic of Projection

Image 80: Anonymous, towncryer with magic lantern (Ausrufer mit Laterna magica), oil painting (18th century).

Hecate:

And that distilled by magic sleights,
Shall raise such artificial sprites,
As by the strength of their illusion,
Shall draw him on to his confusion.

Shakespeare, Macbeth, 3.5.25

"Oh, Kitty! how nice it would be if we could only get through into Looking-glass House! I'm sure it's got, oh! such beautiful things in it! Let's pretend there's a way of getting through into it, somehow, Kitty. Let's pretend the glass has got all soft like gauze, so that we can get through. Why, it's turning into a sort of mist now, I declare! It'll be easy enough to get through——".[354] To exit the real world Alice steps 'through the looking glass'. In a much darker way Neo, the protagonist of *The Matrix* (1999) touches the mirror-glass interface which becomes liquid. And rather than entering the mirror space, the mirror enters Neo.[355] Neo wakes up at the other side and finds 'reality'; he learns that his previous reality was only a projection. He sees how in real life all humans are unknowingly tied down in a gigantic machine while being immersed in imaginary worlds. These stories, of projected illusions which replace reality in one way or other, gesture towards Plato's allegorical cave. They display immersion as childlike innocence or ignorance.

There is another story. It is the story of a sage and a hunter and tells how the sage borrowed other people's dreams by entering their head. "Once the sage entered the head of a hunter. He saw a whole universe complete with stars, people, oceans, mountains, cities and the sun. When darkness fell, the hunter slept, the sage slept too. A fire overwhelmed the hunter's world, but nothing happened to the sage because he realized 'this is just a dream.'"[356] By immersing himself in other people's dreams the

354 Caroll (1871).

355 '*The Matrix*', dir. by The Wachowski Brothers (USA, Warner Bros.,1999).

356 Doniger O'Flaherty (1995) p. 10.

Image 81: Waking up from the dream, *The Matrix*, dir. by The Wachowski Brothers (USA, Warner Bros.,1999).

sage was able to enter many life-worlds and gain understanding. We might conclude from these stories that, knowingly or ignorant, when immersed in a projection we gain experiences through *empathy*. We identify with what happens on screen; we 'weep when they weep', we 'laugh when they laugh'.[357]

Stories on augmentation work slightly different, they tend to show projection as a magical effect. In the case of the projection at *Belshazzar's Feast* (chapter 4) could be told as a story of a magical deception. Similarly, in a Brothers Grimm fairy tale a soldier wants to light his pipe with the blue light but the light turns into a manikin that grants wishes.[358] Another familiar 'smoke projection' is the djinn in the oil lamp who expands Aladdin's reality when he appears from a billow of smoke. Stories on augmentation don't take their protagonist to another reality in another world, rather they tell about *magical encounters* in this world.

What these stories suggest is that we can think of projections as magic. In the 21st century we do not believe in 'magic'. Yet, I assert projections have a magical effect. In the previous chapters I have suggested a distinction between projections in which we immerse ourselves and projections which augment our surroundings. I have shown how some images are staged *on* a screen and others are performed *by way of* a screen. I have illustrated these points with examples from a long tradition of projection art. In this chapter I want to recapitulate these points and examine what is the 'magic' in projection.

An augmentation, whether it is a projection, a deception, or only imagined, makes 'reality as it is' look strange. That is what a projection can do; "[t]his mere change of lighting was enough to destroy the familiar impression I had of my room ...".[359] Marcel Proust describes the change he observed when his childhood room was filled with projections from a magic lantern that someone had gifted to him. He notes how the projected figures merge with objects and sounds in the room making it look disturbingly unfamiliar. The childhood room looked strange. Augmentation can 'make strange'. These virtual layers to reality are persuasive because we could *imagine* them as real.[360]

357 Brecht (2014) p. 111-112 .

358 '*The Blue Light*' (AT: 562) in German: '*Das Blaue Licht*', KHM 116 (1857).

359 Proust (2005) p. 9 .

360 Doniger O'Flaherty (1995) p. 28.

As I already suggested in the prologue, with Esche I see art as "a speculative tool for rethinking current social and political conditions".[361] Projection, I think, could be a 'speculative gesture'.[362] I am interested in those instances of projection art where the virtual image is not staged on a screen for us to immerse ourselves in, rather I ask how can we perform projections creating an *analogical demonstration*, i.e. magic? With the word magic I am not referring to the supernatural; magic, as I see it, is something far more rational. In early modern times, however, magic had fallen into disrepute. How we perceive magic is closely related to how we understand reality and illusion.

Enchantment and enlightenment

In Europe, ideas such as image space as frame, window or door, *poetic faith,* and *willing suspension of disbelief* bridge the contradiction between appearance and material reality. Do we not assume screen reality is distinct from material reality surrounding us? Wendy Doniger compares how distinctions are made between reality and illusion in Indian and European stories. She quotes a question Gombrich asked concerning visual error: "Do [all cultures] accept the demand that contradictions must be ironed out and that all perceptions that clash with beliefs must force us either to change our views of the 'objective world' or declare the perception to have been a subjective experience – an illusion?"[363] Doniger shows how Indian texts may distinguish between appearance and reality, however leaving the contradiction in tact: "if two ideas clash, both may be true".[364] Doniger says about the Western reader: "we think that if the going gets rough, we can always fall back and say 'this is just a story – and even less, a story about a dream'".[365] She concludes that the Western spectator relies on frames and lenses through which to read stories and myths.

Frames put us at a safe distance from illusion. To come back to the ideas of Tolkien and Coleridge I mentioned in chapter 1, when we engage with fiction we tend to 'willingly suspend our disbelief' and give the illusion (the secondary world) our 'primary belief'. The 'reality' of illusions seems to rely on a separation between a primary and a secondary world. We enter from a realm of belief into a realm of disbelief

361 Esche (2005) p. 3.

362 Ibid.

363 Doniger (1986) p. 11.

364 Ibid.

365 Doniger (1986) p. 303.

giving it *poetic faith*. *Poetic faith, willing suspension of disbelief,* but also constructions such as image space as frame, window or door, iron out contradictions between appearance and material reality. It is one of the Enlightenment's achievements to dispel the supernatural and to identify invisible spirits as superstition. It was during the Enlightenment that the attitude towards illusion and magic changed.[366] Not during the Middle Ages, but in the late 16th century magic, sorcery, and witchcraft became punishable crimes.[367] Magic became associated with trick and superstition and was seen as foolish, even dangerous.[368] To read things into the clouds was a matter of confused identity; clouds should be seen as clouds.[369]

Eckartshausen contested the notion of magic as deception and superstition; we depend on our senses to perceive the world, our experience is not absolute but an appearance. As such, he argued, imagination is a reality.[370] There are quite rational arguments to 'believe' in the effects of magic. Eckartshausen demonstrated how illusions could have the same physical effects as sense perception. In his treatise he divides ghost apparitions into three categories: '*Einbildung'* (impressions), referring to the recollection of memory; '*Täuschung'* (deceptions), artificial image creations frequently optical illusions; and *'Vorstellung'* (imagination) that only appears in front of the inner eye.[371] Essentially, magical illusions make the invisible visible, though this is by no means supernatural.

366 The word magic as such is an ambivalent term. 16th century scholar and playwright Giambattista Della Porta pointed out that the Persian word 'magic' means nothing less than wisdom. Della Porta (1658) Chap. I. Magus is an Old Persian designation for members of the priestly cast. Encyclopaedia Iranica, online edition, New York, 1996-2016.

367 The English witchcraft act of 1563 was appealed in 1735 and replaced by an act that was to implement enlightenment by law. With this act it became punishable to pretend to be a witch, a spirit medium, or tell fortunes. Ironically, the witchcraft act evolved into the current consumer protection regulation that potentially makes sorcery and fortune-telling prosecutable as unfair sales practice. Wrightson, Keith E., *Witchcraft and Magic*, Yale courses, Early Modern England: Politics, Religion, and Society under the Tudors and Stuarts (HIST 251) 2011. http://www.youtube.com/watch?v=1rHSu2oDZXE (accessed: 3.6.2013). The new act: http://www.legislation.gov.uk/uksi/2008/1277/contents/made (accessed on 5.6.2013)

368 Bekker (1691) p. 1-4, Heyd (1997) p. 161-162.

369 This was the advice of 17th century painter and art theorist Samuel van Hoogstraten. Alpers (1984) p. 72, 77.

370 Eckartshausen (1790) p. 65-90.

371 Ibid.



In the meantime magic has migrated from reality, the disenchanted world, into art and literature (i.e. *magical realism*). It is there that magic can show the strangeness of reality; or rather the complexness and layeredness of our experience of reality. And it does so by way of mimetic sympathy.

Mimetic sympathy

As we have seen in the previous chapter, projection machines were used in all sorts of 'magic' acts; the machines were useful to frighten the enemy with illusions or to observe the invisible spirit world. Some projectionists would illuminate the depth of contemplation or maybe just perform delusions and treachery. Projections facilitated recording what the 'faithful eye' had witnessed, they might even have a direct impact on material reality. The magic lantern does not concur with Marcel Mauss' definition of magic, as it is not part of a recognised and repeated ritual. However, Mauss' definition of magic and mimetic sympathy might help to understand how the lantern could create illusionary wonders with an impact even when the technical 'trick' was revealed.

Image 82: Richard Newton, *A Magician*, etching, 1795. © Trustees of the British Museum.

Mauss tells us, the representational nature of images follows the 'laws of sympathy'.[372] In a magical sense, an image could be as potent as the object itself. As mentioned earlier, in Buddhist philosophy a reflection of an object has the equal amount of agency as the object itself, since they are both figments of our imagination.[373] A variation on this idea is the '*Scheinbuße',* which was a mediaeval punishment where the shadow of a person, who was found guilty of a small misdemeanour, was beaten. In Scheinbuße the honour of a person is equated with his or her shadow.[374] Mauss explains how *mimetic sympathy* can be understood in the way that "similarity equals contiguity"; the image is in 'direct contact' and takes on the properties of that what is represented.[375]

The idea of mimetic sympathy compares to Koen Vermeir's term *analogical demonstration,* which I mentioned in chapter 1. An analogical demonstration is a magical symbol.[376] A magical symbol visualises the invisible and hidden processes in nature by *mimetic sympathy*. The magic lantern, for instance, would show the invisible as an analogy. Psychophysiological space extended with 'analogical demonstrations' might create an experience of 'magical space'. This idea could imply that magic is not inane trickery, rather a psychological device.

With this in mind we could look at virtual reality experiments with *tactile immersion* as experiences of mimetic sympathy. Our sense of touch is stimulated while we look at projected images. This is how a mirror box works: place one hand into the box, one alongside it – the mirror reflection replaces the hand in the box. Such boxes, as already mentioned earlier, are used to treat phantom limb symptoms. The patient sees the existing limb doubled and experiences his completed symmetry

Image 83: Demonstration of mirror box therapy for phantom limb pain developed by Dr. V.S. Ramachandran at UCSD. http://cbc.ucsd.edu/~lseckel/haiti.html (accessed 13.1.2015).

372 Mauss (2005) p. 15.

373 Westerhoff (2010) p. 162.

374 Carlen (1993) p. 10. At the time of Emperor Maximilian I (15th century) to cut of someone's shadow was a punishment connected with banishment. Cutting off the shadow of a wrongdoer was considered taking away his 'Schutzgeist', his guardian spirit, and the person was consequentially outlawed. Wolf (1852) p. 347-348.

375 Mauss (2005) p. 84.

376 See chapter 1.

as if regaining the missing limb. The mirror box is an analogue version of computer software involving *natural user interfaces* (NUI) used in phantom limb treatment but also in video gaming.[377] As the mirror box exemplifies, the 'magical' projection can have a causal effect onto the material world.

We tend to approach immersive projections like Alice looked at the mirror. If we suspend our disbelief, we could enter the looking glass house which is staged on the mirror-screen. Since Enlightenment magic is often understood as pseudo-scientific supernatural or reduced to a bunny-and-hat-trick. However, if we understand magic as an analogical demonstration, we could look at a projection as a magical encounter. *By performing something absent as present, the projection might expand what we know as 'real'.* To put it differently: in a speculative gesture a projection could make what is familiar look strange. This may well be true for magic lantern projection, but what does this mean for projection now and its use in contemporary art?

Strange projections

As I have tried to show, augmentations in art can '*make strange*'. Augmenting projections are persuasive, not because they are materially 'real', rather because they make visible what we could *imagine* as real. To repeat Eckartshausen's understanding of ghosts, projections play on our 'Einbildung' (impressions) and 'Vorstellung' (imagination), and at times deceive us. It compares to what Wendy Doniger says about myths.[378] Myths are stories about actions. The action in the story may not be physically possible, yet when described to us in detail we can picture it happening, which enlarges our sense of what could be conceivable.[379] This, as I have set out at the beginning of the thesis, is how I approach art making. I understand art as a technique to produce awareness. In the words of Victor Shklovsky: "[t]he technique of art is to make objects 'unfamiliar' to make forms difficult".[380] To make objects unfamiliar and to enlarge our sense of what could be conceivable are ways we distance ourselves from simple reality or from our direct and intuitive impression of it.

377 Jan Westerhoff describes the mirror box and other cognitive constructions. Westerhoff (2010) p. 172. Computer generated simulations are a more interactive way of the mirror box used with patients who wear a prosthesis. Bohil, Alicea, Biocca (2011) p. 759.

378 Doniger O'Flaherty (1995) p. 28.

379 Ibid.

380 Shklovsky (2006) p. 778.

As the stories at the beginning of this chapter suggest, projections can create (conscious or unconscious) understanding through empathy or distancing. Plato's cave shows immersion as ignorance; however, the story of the sage and the hunter does the opposite. The sage gains understanding and *becomes* a sage by immersing himself in people's dreams. Augmentations can create meaning through distancing, yet Belshazzar the Chaldean king was deceived by it. How does it work when we are dealing with contemporary projections? The premise under which we experience illusions today often depends on a *screening* of reality. Projections are staged on a canvas. By containing illusion on a screen – within a frame, the magical is separated from the real. To engage with the magical other, we suspend our disbelief, our rationality. Today we are seeing a paradigm shift where projections are layered into space, not as immersive experiences but as augmentations of our everyday.[381] I argue, despite rationalisation of sight, projection can have an impact on its material surroundings in *mimetic sympathy*. Augmentations are layers in space which create *situations*.

Let me return to the question at the beginning of this text: are projections *'speculative tools'* or pure magic? *To me magic and strangeness are vital dispositions of projection.* Magical and critical augmentations differ in the sense that the former are our everyday interactions with virtual images on mobile devices and the likes, and produce what Bloch describes as the evil mode of 'an existence of selling-and-being-sold'.[382] The latter are projections which make our everyday strange and make 'the beholder look up'.[383] I see augmentation as a technique in art to 'make strange' and create a distance that can be either pleasant or unsettling. The technique of distancing is far from new, but is an essential method in art making. It lets us imagine things differently. Augmenting projections are persuasive, not because they are materially 'real', rather because they make visible what we could *imagine* as real.

Image 84 (next pages): Jan Saenredam, Detail of *Antrum Platonicum*, engraving, after Cornelis van Haarlem (1604). © Trustees of the British Museum.

381 Elsaesser observes how "our embodied relation to data-rich simulated environments" is changing. See chapter 1.

382 "Alienation, estrangement: the terms are bound together by the alien, the external; yet in them evil and beneficient modes of experience can be distinguished in specific, very particular ways." Alienation (*Entfremdung*). Bloch (1970a) p. 121-122. *Verfremdung* and *Entfremdung* are words without a perfect match in English, also *ostranenie* is apparently difficult to translate.[33] Key ingredient is the word 'strange' or alien. Berlina (2016) p. 14.

383 Making strange (*Verfremdung*). Bloch (1970a) p. 123.


ANTRVM PLAT


TONICVM.

In my artistic work, experiments with light projections are part of the creative process. I use both immersive and augmenting projections. Even so, I am interested in advancing a space based projection praxis, i.e. augmentation. This text is intended to research how projections are experienced and to analyse the image traditions in relation to that. I set out to study records of the history of projection as a medium. The vast number of examples I found have led me to consider their various approaches to reality.

Immersive illusion seem to have been dominant in European representation. Devices such as frame, window, or door, poetic faith, and willing suspension of disbelief bridge the gap between illusion and material reality. Immersive projections stage virtual images on a screen and solicit an empathic response. In contrast to this, augmentations are space based and perform a virtual image to an audience. Indeed, when applied in art, both immersion and augmentation can be used critically; however, in immersions the moment of critical reflection is postponed. Augmentation on the other hand may trigger a direct awareness, as I have experienced most immediately in the work *Silent Empress*.



ICONOCLASM projected:

Silent Empress

Augmentation does not imply image projection. Augmentation of space can also be auditive or tactile. The project *Silent Empress* is an example of an extension of reality by means of sound. *The Silent Empress* was a sound tag on the statue of Queen Victoria on Castrop Rauxel Square in Wakefield, 2012. The audio 'graffito', was temporarily attached to the statue of the Empress, making her speak. *"Council chiefs not amused by art installation. A DUTCH artist has been slammed for strapping a megaphone to a statue of Queen Victoria"* was the subsequent headline in the Sun.[384] The Council of Wakefield had given permission to an art project commissioned by one of Yorkshire most popular contemporary art institutions. The work was intended to highlight British history of Imperialism. The audio monologue was a quasi apology for colonial times, and was a collage of quotes from journals and letters of Queen Victoria as well as speeches and texts by Gordon Brown, Tony Blair, David Cameron, Lin Zexu, William Gladstone, Lord Salisbury, Winston Churchill and Somerset Maugham.

The statue spoke for less than half an hour before the council decided it was an inappropriate action and at the request





Images 85, 86: Sophie Ernst, *Silent Empress*, 2012.
Image 87: Members of the local Council inspect the intervention at Castrop Rauxel Square, Wakefield, 2012.

384 The Sun, 2 July, 2012.

of the local police needed to come down. *The Silent Empress* addresses the question of commemoration and post colonial identities in Europe by example of the United Kingdom. Questions of restitution and apology for wrongdoings during the colonial period have been going through the news media in Europe. I was asking myself the question what meanings do public statues of the colonial period hold for different groups in society? The provocation is acted out by means of a media extension in a social space; the static queen appears to magically speak to her people. Albert Camus once said that the imaginary world art creates is based on changes to the actual world.[385] And it is through augmentation that fiction can be acted out in reality.

385 Camus (1957) p. 326.

Image 88: Sophie Ernst, *Silent Empress, Wakefield*, 2012.


VICTORIA REG. ET IMP.
1837 — 1901
THIS STATUE WAS ERECTED BY THE CITIZENS OF WAKEFIELD
AS A MEMORIAL TO THEIR GREAT AND GOOD QUEEN
1904

1. The thin Mouse and the big Cheese.

2. The Mouse, contented, flies away.

3. But the Cats object.

4. And are furious at being done.

Louis Wain

Epilogue
Artistic Practice

Image 89: Louis Wain, *A Magic Lantern Lesson*, The Sketch Periodical, March 14, 1894, p. 364.

"The question, then, is this: is the enjoyment of art even possible without empathy, or in any event on a basis other than empathy? What could such a new basis offer us?" [386]

Bertolt Brecht (1939)

386 Brecht (2014) p. 143.

When I made Queen Victoria speak, it was too strange for the local council members of Wakefield. With the interjection I intended 'the beholder look up'. They looked up alright and thought "it was an odd, bizarre and ludicrous thing to do".[387] The local politicians in Wakefield experienced the sound-tag as an insult. It was not my intention to solicit empathy by putting words into Queen Victoria's mouth, the intervention was intended as a provocation. Possibly some viewers did not agree with my point of view, nevertheless, they experienced the situation as a critical augmentation.

It is possible to describe projection art as a dismantling of media illusions and the cinematic screen or, quite the reverse, as a cinematic immersion. I am not interested in questions pertaining to the cinematic. Rather, I look at projection as a layering of space with virtual images. I hope to have demonstrated how this layering diffuses the boundaries of reality and illusion. Our imagination is shaped by all kinds of projections. I have described projections as sculptural, immediate, performative, magical, contradictory, as a social practice, consumer product, or a political act. I have distinguished two basic attitudes to projection: immersive and augmentative. Immersive projection presupposes a *willing suspension of disbelief*. Technology is often obscured or hidden. Augmentations make the invisible visible within an existing context. The projected image is inserted as a possibility into an existing situation. The distinction between immersion and augmentation has led me to look at two qualities projection can have: either empathetic or distancing.

Immersion evokes a sense of empathy. An immersion renders the screen (projection interface) transparent and increases our emotional involvement. We tend to ignore the presence of the projection technology and experience that which is materially absent as present, thus giving primary belief to the secondary image world. We exchange the conscious for the imaginary, and enter from a realm of belief into a realm of disbelief. The immersing artwork must create the illusion of totality, the "semblance of truth": it is total real life else we would not suspend our disbelief. Augmentation on the other hand can be seen as a method to distance the viewer from what she sees. It brings together the real and virtual by expanding the screen with a projection. An augmentation is a 'mixed reality'. The augmenting artwork is selective as to the aspects of reality it wants to represent

387 Wakefield Express, Saturday 30 June 2012. http://www.wakefieldexpress.co.uk/news/local-news/queen-victoria-is-not-amused-by-gagging-in-wakefield-1-4695663 (accessed on 20.11.2015).

and to put at critical scrutiny. This is not a question of belief or disbelief of realism, but of deliberate "research". In a similar vein, science does not tell us what *is* reality, but only what we can *say about* reality. By augmenting we gain understanding through *making strange* (alienation or distancing). I distinguish between *magical* and *critical augmentations*. The distancing effect, Bertolt Brecht's '*Verfremdungs-Effect'*, Shklovsky's '*ostranenie',* turns a familiar object from something ordinary, immediately accessible, into something peculiar, striking and unexpected. However, I do not think that augmentations are always critical. Before Enlightenment augmentations were *analogical demonstrations*, magical symbols visualising invisible, and engaged the recipient empathically. Also today, the media augmentations of our smart devices are magical symbols. They alienate us and commodify our lives.

On the whole the distinction between empathetic immersion and critical distancing is not new. As I have mentioned earlier, Brecht made a division between dramatic and epic theatre. His idea refers back to Schiller's debate with Goethe on epic and dramatic poetry.[388] Schiller wrote that 'dramatic action' moves in front of our eyes, whereas 'epic action' appears to invite our movement. He elaborates on this significant difference: while immersed in dramatic action the viewer is tied to the presence ('sinnliche Gegenwart'), there is no space for imagination or reflection. Unlike dramatic theatre, an epic action lets the viewer move about according to her subjective inclination – it allows for pauses, anticipation and sidesteps.[389] My interpretation of the distinction between dramatic and epic action is the opposition I drew between immersive and augmenting projections.

To an amenable audience projections can be deceptive. Horkheimer and Adorno observed that media are not neutral or benign. Culture industry offers and we, people with leisure, accept.[390] We may be more literate today when it comes to media, yet, Horkheimer's and Adorno's observations about media in relation to power remain valid. New augmentation technologies are emerging as products of the culture industry, they appear to give consumers an active role in the process of generating 'clouds of information'. To the industry, technology is of no interest unless it becomes an 'object of desire', or rather an object of demand

388 Schiller (1881) 392.

389 Schiller (1881) 392.

390 Adorno, Horkheimer (1997) p. 124.

creating profit expectations.[391] Media scholar Mark Bolas even concludes from his research of mixed reality that we have come to prefer the virtual world and "tune away from the real world".[392] Why do we tune into the virtual? It appears to offer something useful to us in way of information and experience.

How do we experience projections? I have asked this question at the onset of this book and have looked at contemporary art, image theory, media history and stories. As artist I ask this question and look for answers with each work I make. In my sculptural works, I have used projections both as immersion and augmentations, aiming at either compassion or irritation. Projection can make the hidden visible. The hidden can be an interface (Anna Anders), the inner self (Tony Oursler), the socially marginal (Krzysztof Wodiczko), the architecture of power (Aernout Mik), or intimacy (Janet Cardiff).

What is the relation between my theoretical findings and my artistic work? With my projections I look for layers of memories in spaces. Memory means being mindful. Mindful means being aware. A memory of a space could mean being aware of certain qualities of that space. The sound-tagging of the Victoria statue in *Silent Empress* was intended to reveal memories of a colonial past. The question asked was, what if Queen Victoria were to apologise? When the statue answers a situation arises. *HOME* (2006-2012) reconstructs spaces through layers of memories. For this project I collected over 100 hours of video material documenting personal stories of migration. In places like Karachi, Bombay, Birzeit, Tel Aviv, London and Lahore I talked to writers, artists, historians, architects about their biographical memories connected to a particular house.[393]

Artist Iftikhar Dadi summed up the project as follows: *"The HOME project can now be thought of in several registers: an oral history archive; a personal biography of intellectuals; an act of translation across visual media; and the larger questions this body of work continues to evoke, preventing any sense of easy closure of historical injuries lodged in memory that continue to have real effects. In this sense, the open-ended inquiry enabled by HOME has a structural analogy to the nature of its material – memories do not remain safely in the past but overflow as existential*

391 Ibid.

392 Computer scientist Steven Feiner says unless technology is an object of desire "it will not take off". Faculty Summit 2012, Microsoft Research Connections http://research.microsoft.com/apps/video/default.aspx?id=169813 (Accessed on 20.10.14).

393 Ernst (2012).

Image 90: Sophie Ernst, *HOME*, video installation, 2006-2012. Photo: Felix Krebs.

dilemmas into the present, just as HOME cannot be circumscribed by one location or in particular material forms."[394]

In the *HOME* videos, showing hands drawing floor plans, are mapped onto architectural models. It places the viewer into the projection beam; the hands of the protagonists are layered onto the hands of the viewer. The drawings appear and disappear while the protagonists describe the spaces and ask questions: What do we choose to remember and how? Are memories inventions and when is remembering political? Where is the line between nostalgia and memory?[395]



Image 91: Sophie Ernst, *No Place Like America*, installation, Pakistan Pavilion, Art Dubai, 2008.

Also in *No Place Like America (2007-2010)* the viewer is immersed into projections. The subject of the work is economic migration. Like in *HOME,* the videos are mapped onto a nondescript white structure (in this case cardboard boxes). The projection shows intimate living spaces of the portrayed men. The sound track adds a further space description; the protagonists imagine their life in America.

The works I described have a layering of projections into space in common. The difference between the approaches is that *HOME* and *No Place Like America*

394 Dadi (2012) p. 17.

395 Ernst (2012).

are immersive and solicit empathetic responses, whereas the *Silent Empress* and *Victory* (2004), the work described in the introduction, is aimed at creating a critical distance.[396] Empathy and critical distance are responses to immersion respective augmentation. Nonetheless, the works all are propositions, possibilities projected into space. The created situations are experimental designs testing questions such as: What do we choose to remember and how? Are memories intimate inventions or is remembering political? Is it possible to draw a line between nostalgia and memory? What if we could re-enter imagined spaces? What is real, what is projected? How can an object of the imagination be real? Like a ventriloquist's dummy, projections magically reveal an aspect that is inherently present in an object. The dummy says unspoken things the ventriloquist would never say. The ventriloquist oversteps boundaries through his dummy to provoke a reply from his audience. In *HOME,* as a viewer I take the place of the speakers. I imagine their presence by watching their drawings materialise. Judging from the visitors comment book at the Yorkshire Sculpture Park, viewers identified with the stories and the work triggered personal recollections. The augmentation of the *Silent Empress* reveals something invisible or unspoken about the object. The viewers responded with disapproval and their objections resulted in censoring. Both works are rethinking social and political conditions. The former work by creating a situation, the latter by changing an existing situation.

Image 92 (next pages): Sophie Ernst, *The Scream, Portrait of the Artist*, video sculpture, 2016.

396 At the exhibition *HOME*, Yorkshire Sculpture Park (2012) a comment book was kept which documented this.





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Summaries

Image 93: Charles Amédée Philippe Van Loo, *The Camera Obscura*, oil on canvas, 1764
National Gallery of Art, Washington

The Magic of Projection

Augmentation and Immersion in Media Art

Since the 1960s, image projection and the cinematic have become more and more pervasive in contemporary art. My dissertation addresses the question in what manner are projections applied in contemporary art and what image traditions does this relate to.

What drives the study are my observations on the difference of immersion and augmentation in projection. I use immersion and augmentation as two distinct technical terms denoting projections that are respectively screen-based, presenting a secondary, or cinematic reality, and space based mapping an image onto space. It appears to me that this immersive mode of projection and its relation to cinema dominates projection art and large parts of the theoretical discourse around projection- and media-art. Immersion presupposes a willing suspension of disbelief, and it implies an opposition between material reality and imagination. In case of a projection mapped onto a three-dimensional object, the 'screen reality' and 'material reality' are merged into a 'mixed reality'; we perceive the projection as 'augmenting' the object.

Augmentations can be experienced as magical. Augmentations make our everyday world strange. Magical encounters can create distance by making strange. I see augmentation as a technique in art to 'make strange' and create a distance that can be either pleasant or unsettling. The technique of distancing is an essential method in art making. It lets us imagine things differently. Augmenting projections are meant to be persuasive, not because they are materially 'real', rather because they make visible what we could imagine as real.

De magie van de projectie

Het immersie en toeveogende (augmentatieve) in de media kunst

Sinds de jaren zestig van de twintigste eeuw nemen in de hedendaagse kunst videoprojecties en het bewegende beeld een belangrijke plaats in. Dit onderzoek beoogt de volgende vragen te beantwoorden: op welke manieren worden projecties als beeldend materiaal worden ingezet in de hedendaagse kunst, en uit welke beeldtradities komen deze voort?

Mijn insteek berust op een onderscheid tussen 'onderdompelende' (immersive) en toevoegende (augmentative) projecties. Onderdompelende projecties domineren op het moment de projectiekunst en grote delen van het theoretische discours. Zij produceren een filmische realiteit. Ze impliceren een tegenstelling tussen de 'echte', materiële werkelijkheid en een fictieve werkelijkheid. In een onderdompelende projectie zet de kijker haar scepsis opzij en geeft ze zich tijdelijk over aan de verbeelding. Toevoegende projecties daarentegen vinden expliciet in de ruimte plaats: een bewegend beeld wordt op een driedimensionaal object geprojecteerd. De realiteit van het object en de werkelijkheid van de projectie vloeien daardoor samen.

Toevoegende projecties kunnen als magisch worden ervaren, doordat zij onze dagelijkse wereld 'vervreemden' en afstand creëren tussen ons en de werkelijkheid zoals we die kennen. Augmentatieve projecties kunnen ons het dagelijkse, het overbekende, opeens vreemd doen lijken en opnieuw laten bekijken. Ik betoog dat de techniek van afstand nemen om een nieuwe of andere blik op de werkelijkheid mogelijk te maken een essentiële eigenschap is van beeldende kunst. Toevoegende projecties willen overtuigen, niet omdat ze de werkelijkheid tonen, maar omdat ze een mogelijkheid in de bestaande werkelijkheid laten zien.

Biographical note

Image 94 (next pages): Krünitz, Johann Georg, *Oekonomisch-technologische Encyclopädie*, (1773 - 1858) Bnd. 65, p. 519.

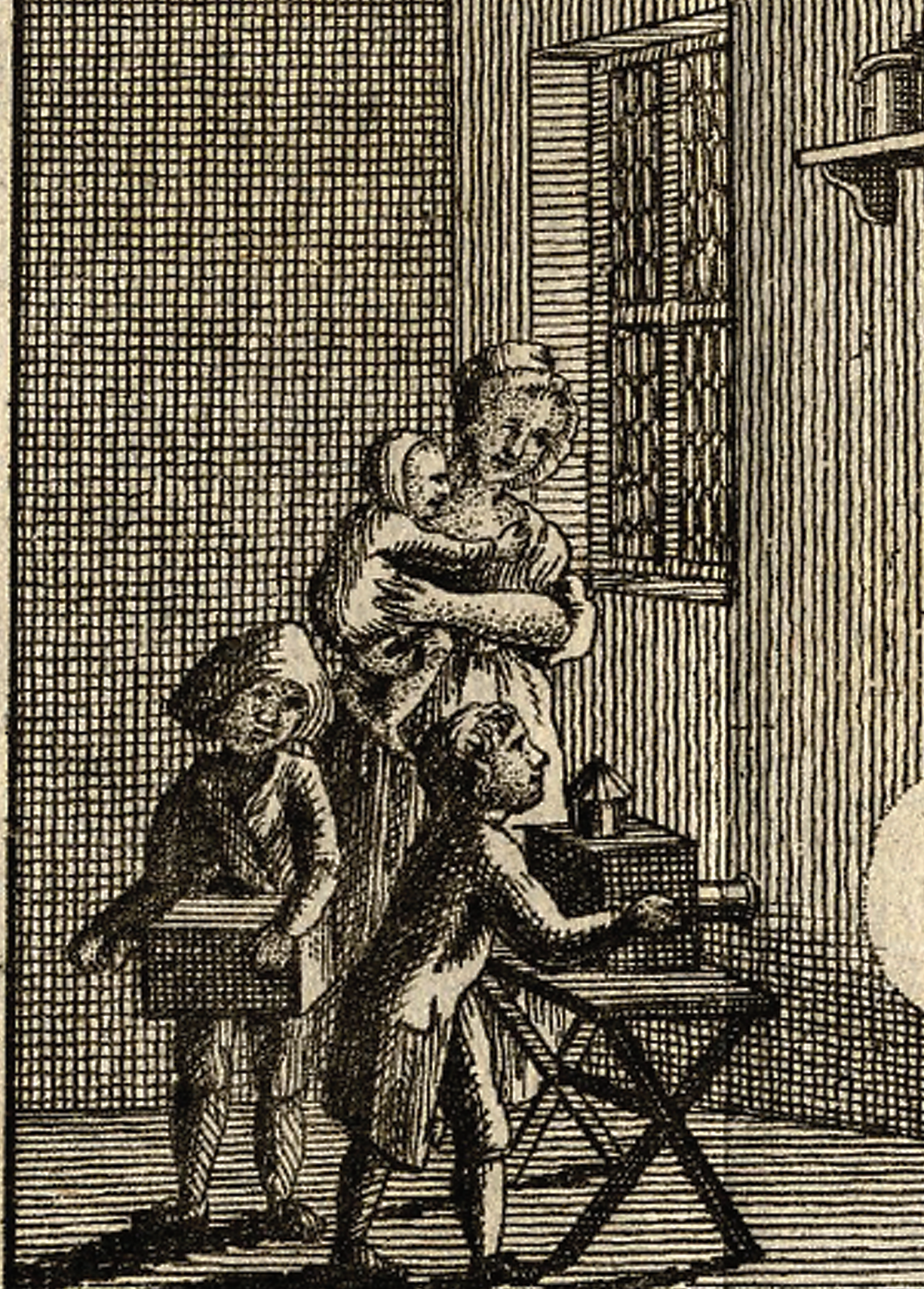
Sophie Ernst was trained as an industrial mechanic at BMW, Munich (*Gesellenbrief* 1995) before studying sculpture at the Academie Beeldende Kunsten Maastricht (baccalaureus, 1998). Ernst is a graduate of the Rijksakademie van beeldende kunsten, Amsterdam (2000). She lived and worked for four years in Pakistan (2003-2007), where she taught as an Assistant Professor at the Beaconhouse National University.

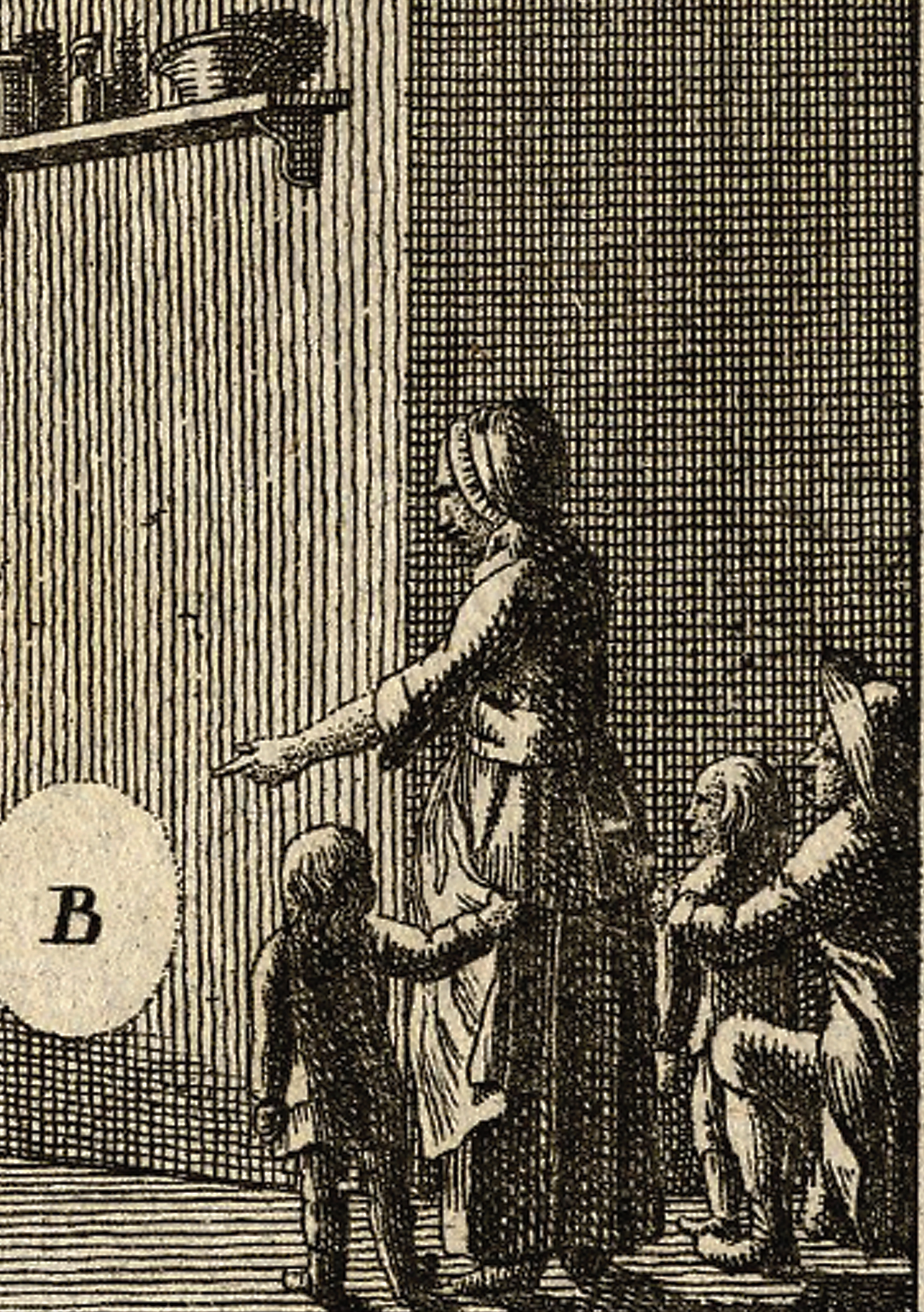
Her work evolves from conversations and interviews and she sees making art as a response to these encounters: "As an artist I am not simply a producer of objects, but I see art as a *speculative tool* for rethinking current social and political conditions." In her artistic work she has used projection in relation to architecture, memory, culture, historical objects, urban spaces and identity. She has presented her work widely at exhibitions, such as: the 6th Moscow Biennale; 14th Asia Triennial, Manchester; 9th Sharjah Biennial; *Lines of Control*, Johnson Museum (Cornell University) and Nasher Museum (Duke University); *Move on Asia*, ZKM (Karlsruhe); and solo exhibition *HOME*, Yorkshire Sculpture Park.

Recent lectures include: "The HOME project", Figurer l'exil, Colloque, Fondation Maison des sciences de l'homme, Paris; "An intellectual history of the Power-point projection", Changing Societies?, Conference, Institute for Asian and African Studies, Humboldt University, Berlin; "Idealised Enclosures", Sites of Construction in Asia, Symposium, Asia Art Archive, Hong Kong.

She published books and articles such as: Idealized Enclosures in *Yishu, Journal of Contemporary Chinese Art*, Vol. 13, Nr.2, CN; Ernst, Sophie, *HOME: Architecture of Memory* (West Breton: Yorkshire Sculpture Park, 2012); (Issue editor) Oeuvre, *TAKE on Art*, Vol I, Issue 4, 2011; Side effects, in *Contemporary South Asia*, Vol. 19, No. 2, June 2011; Ernst, Sophie, *LOVEDOLLS* (München: Museum für Abgüsse Klassischer Bildwerke, 2004)

Sophie Ernst's doctoral thesis is an artist's contribution to media art theory. It focusses on the role of projection as material for sculpture. She considers projections to be either immersive, like a cinematic experience, or augmentative, in the sense of a mixed reality. Immersions, the dominant mode in projection art and large parts of the theoretical discourse, presuppose a *willing suspension of disbelief*. Augmentation, on the other hand, can be seen as 'magical'. It is a technique in art to 'make strange' by creating a distance that can be either pleasant or unsettling. Ernst argues that augmenting projections are persuasive, not because they are materially 'real', but rather since they make visible what we could imagine as real.




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