

2D/3D Producing Illusion

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Landscapes Coleção
Heritage & Paisagens
Territory Património &
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2D/3D . PRODUCING ILLUSION

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6	Foreword
9	Regarding illusion(s) João Cabeleira & José Capela
12	Illusion and its mechanisms
14	Clara Imbert – Invited Artist
16	<i>Trompe l’oeil</i> as instrument of thinking Hanneke Grootenboer
30	What is wrong with <i>trompe l’oeil</i> Vítor Moura
50	Baroque Illusion and the mediation between built and represented space. From the corporeal to the gaze João Cabeleira
60	The inconsistent images of Piranesi’s <i>Carceri</i> : filling the gap between 2D and 3D representation Sofia Menconero
70	Methodologies of restitution
72	Pedro Barbosa – Invited Artist
76	Virtual Experiences: The Room of Pompeo as a “Covered” Courtyard in the <i>trompe l’oeil</i> of Angelo Michele Colonna and Agostino Mitelli at Spada Palace in Rome Laura Farroni, Matteo Flavio Mancini & Giulia Tarei
84	The Apocalypse of optics, the eyewitness of the Apocalypse: time, space and illusion at Trinità dei Monti Agostino de Rosa

94	New visualities
96	João Pombeiro –Invited Artist
104	On Perspective as Depth Simulation Jacob Gaboury
114	Domestic Proscenium: Television in the American Postwar Suburban House Luísa Sol
124	The illusion of Open Space— The use of technology and design tools to mitigate confinement in urban underground spaces Luís Mestrinho
132	The materiality of ‘materiality depiction’ José Capela
140	Politics
142	Gil Madeira –Invited Artist
144	Public Situations: Memory and Distancing Livia Koeche
152	@#D: Other Notes on Rendering and Augmentation Gaspar Cohen
160	Reality as composition and consensus Moiré patterns and circumstantial meanings Vitor Grilo Silva
168	Biographical notes

Foreword

The book *2D/3D . producing illusion* stems from the homologous meeting that took place at mala voadora (Porto) on the 27th and the 28th of May 2021. It was a mala voadora initiative included in its four-year program financed by dgArtes, commissioned by the two professors responsible for the specialization course of scenography, lectured at the School of Architecture, Art and Design of the University of Minho. João Cabeleira (EAAD/Lab2PT) and José Capela (mala voadora/EAAD/Lab2PT), in the complicity of a common interest in the domain of visual and spatial illusion, launched themselves in the organization of the event. Moving beyond the strict scope of architecture and the image of space, the initiative opened up to the consideration of *illusion* from other disciplinary domains of action and cogitation. Taking perception and representation of space or the geometric and mathematical abstraction at the basis of linear perspective as a starting point, the event *2D/3D . producing illusion* promoted the exchange of practices and scientific speculation on illusion embracing contributions from philosophy, history and theory of art, architecture, scenography, visual arts, cultural studies and geometry. Parallel to the presentation of communications, the event included an exhibition of works by artists that involve these same themes. This publication includes the communications and artworks, both presented at *2D/3D . producing illusion*, collecting and disseminating a comprehensive overview of the discussed contents.

We can consider the invention of perspective as a defining feature of “European art”. This Cartesian device for space representation and consideration was crucial for the development of the continent’s art, architecture and scenography for several centuries, and its products were one of the cultural marks of European expansionist policy. The construction of mimetic images has undergone considerable changes with the invention of photography, film and digital tools. The illusionist suggestion of three-dimensionality seems to have taken on a new meaning now, when most of us spend the day looking at monitors and screens, in a curiously similar situation to the public who, following the invention of perspective, has seen theatre through a big window called “proscenium”. On the other hand, within the scope of artistic practices, the modalities of representation have deviated from mimicry in favour of admittedly “wrong” games, or meta-representation. The tools of representation have changed, the nature of images has changed, but the will to illusion is maintained, thickened, or countered with calculated ingenuity. In this sense, the *2D/3D* conference is not limited to perspective (between its

FOREWORD

invention in fifteenth-century Italy and what it entails in new technologies), aiming to include a wide variety of representation systems that somehow compete with the production of illusion. Around this thematic core, and extending its scope to all areas of image and space production, the following themes were considered: illusion and its mechanisms, methodologies of restitution, new visualities and politics.

To share with us points of view that are references for thinking about these themes, invitations were addressed to two Keynote speakers who promptly and enthusiastically agreed to collaborate with us. We had the privilege to count on with the presence of Hanneke Grootenboer, from the Department of History, Art History & Classics Radboud University, and Jacob Gaboury, from the Department of Film & Media UC Berkeley. Invitations were also addressed to four visual artists whose recent practice explores visual illusions, the simulacrum of space, and questioning on what we see and how we see or perceive: Clara Imbert, Gil Madeira, João Pombeiro and Pedro Barroso. Undoubtedly, the keynotes conferences and the art exhibition were major moments of reflection, share and discussion.

In the preparation of the event, the delineation of its image and communication strategy poured into the construction of the website <http://www.2d-3d.org>. It was an essential instrument for the dissemination of the event and its open Call for the presentation of communication proposals. From the received proposals, 10 authors were selected.

The event's success was only possible thanks to the enthusiastic participation of all guests, authors and collaborators who, from the beginning, were receptivity to the launched challenge. We thank the presence and contribution of keynotes, visual artists and authors, either in person or online, sharing with us two days of intense discussion, and also of fun, under the spectrum of *illusion*: Agostino de Rosa (Department of Architecture and Arts, Università Iuav di Venezia); Clara Imbert (invited artist); Gaspar Cohen (Faculty of Sciences, University of Lisbon); Gil Madeira (invited artist); Giulia Tarei (History, Drawing and Architectural Survey Department, Sapienza University of Rome); Hanneke Grootenboer (Department of History, Art History & Classics, Radboud University); Jacob Gaboury (Department of Film & Media, UC Berkeley); João Cabeleira (School of Architecture, Art and Design, University of Minho); João Pombeiro (invited artist); José Capela (School of Architecture, Art and Design, University of Minho); José Vítor Correia (Faculty of Architecture, University of Lisbon); Laura Farroni (Department of Architecture, Roma Tre University); Livia Koeche (Identity and Territory Research Group, Federal University of Rio Grande do Sul); Luís Mestrinho (School of Architecture, Art and Design, University of Minho); Luísa Sol (Faculty of Architecture, University of Lisbon); Matteo Mancini

2D/3D . PRODUCING ILLUSION

(Department of Architecture, Roma Tre University); Natacha Moutinho (School of Architecture, Art and Design, University of Minho); Pedro Barbosa (invited artist); Samuel Guimarães (Superior School of Music and Performing Arts, Porto Polytechnic Institute); Sara Franqueira (Theatre and Film School, Lisbon Polytechnic Institute); Sofia Menconero (Faculty of Engineering, Sapienza University of Rome); Vítor Grilo Silva (Independent Researcher); Vítor Moura (Department of Philosophy, University of Minho). In addition, we cannot fail to acknowledge all of those who, apparently less visible, sustained the *2D/3D* engine: Andreia Bento, João Fonte, João Vaz Cunha and Pedro Jordão (mala voadora); Carolina Pires and Sandra Pereira (School of Architecture, Art and Design, University of Minho); Sandra Barbosa (Lab2PT, University of Minho); and Diogo Matos and Tiago Carneiro (Graphic and Web Design).

The event was also supported by the R&D unit Lab2PT (Landscape, Heritage and Territory Laboratory of the School of Architecture, Art and Design & Institute of Social Sciences, University of Minho, classified as excellent and financed by the FCT, Compete 2020 and the European Union), along with the institutional support of NIEP and CEHUM (University of Minho).

João & José

Regarding illusion(s)

The pursued argument by Hanneke Grootenboer puts us, immediately, in face of the intrinsic capacity of images in the inquiry of the seen, experienced and rationalized cosmos. It questions image and its relation with the subject, either visual, physical or cognitive, namely from those expressing restlessness boundaries between the tangible and the intangible. There is thus an understating of the image surpassing its condition of mere visual stimulus to assert itself as a knowledge and thought triggering element. The space that appears before us in an illusionistically convincing way is a philosophical space — or rather a machination of spaces that acquire meaning as parts of a metaphysical world.

Grootenboer's exposed reasoning opens up the debate on **illusion and its mechanisms**. Vítor Moura also related *trompe l'oeil* and philosophy but in another way. He questioned the artistic status of paintings that are inscribed in the *trompe l'oeil* category, through the paradox that is established between being aware of representation and not being aware of it. Where can we find the boundary between what is technical virtuosity and what is art? If Moura problematized this border as a problem of aesthetic definition, João Cabeleira analysed the interesting borders that artists actually create between the *virtual* space of the *trompe l'oeil* and the *real* space inhabited by the beholder. What devices can solve this difficult transition between these two rather different spaces? He explored the sensorial dimensions of both constructed and represented space and reflected on the relation between body and gaze, in a simultaneous absorption of the tangible and intangible world. The condition to an effective experience of space, whether real or induced to the senses, are besides the perspective procedures based in the effective plasticity of the image. Focusing also on the metaphysical space that the illusionist representation can generate, Sofia Menconero analysed the incongruities of the perceptual image, departing from Piranesi's *carceri*. Overcoming the idea of error, and assuming the variability of the taken possibilities in the reconstruction of the architectural represented space, Menconero distinguished the options of the Italian architect whose images, in the absence of constructive or physical coherence, do not withdraw the illusory power of his etchings. The artist included in this group was Clara Imbert, who creates "vision apparatus" that, while evoking the scientific history of perspective, are displaced into a ludic and speculative world, without rational purposes. Lambert explored the seen transformation of the real, taking advantage of the Albertian peeshow and rudiments on catoptrics and dioptrics.

The second group of texts focuses on **methodologies of restitution** and includes discussions in which historical research

and the creation of virtual realities intersect. Laura Farroni, Matteo Mancini and Giulia Tarei analysed an idea of enchanted space, concerning the great illusionist set provided by the *quadraturas* of the Spada Palace in Rome. To a full comprehension of the illusory space, contemporary instruments are explored, namely immersion by digital simulacra, placed side by side with the direct experience of illusion by the gaze (the ocular relation between the subject and the *quadratura* image). Agostino De Rosa followed an order that seems to emanate from the exploration of rudiments in visual illusion, more specifically from the extrapolation of optical knowledge and perspective procedures. De Rosa examined the painted visions by Nicéron, namely his anamorphosis, in what they imply of visual magic transcending reason. The artist Pedro Barroso offers us impressive macroscopic views of the microscopic, and leads us to discover levels of a reality that, despite being present, are not always perceived by the gaze. Barbosa does not deal with time (except for the time involved in the impressive meticulousness of his manual work), but works with “restitution methodologies” through the unexpectedness of scale.

Jacob Gaboury was the second keynote speaker at the meeting. Although focusing upon the digital image and media, his contribution reasoned over a problem that cuts across the entire history of illusion: the technical generation of verisimilitude and the differences between what space *is* and what it *appears to be*. In the impossibility of any simulacrum matching to the complexity of the “natural”, either in the amount of information or in the way perception dismantles and reorganizes it, what elements, what instruments and what strategies are adopted to impose illusion to the senses and to reason? It thus advances on the limits of perception and how illusion results from processes that are as much about manufacturing the invisible (understood but not seen) as achieving visual realism.

Gaboury’s argument precedes the third group of texts, whose theme is **new visualities**. Entering into the interferences of illusion over the inhabited space, Luísa Sol explored the idea of a domestic Proscenium provided by television. The inhabited space of the house is considered simultaneously as stage and audience of everyday life, or of a construction of some kind of everyday life. Moving from the domestic interior to the underground, Luís Mestrinho took up the potentiality of illusion in the reconfiguration of stigmatised urban underground spaces. Mestrinho equated the hypothesis that, similarly to the achievements of the great baroque illusion, this contemporary reconfiguration alters the conformation of the physical world. José Capela discussed a set of artistic practices — between scenography and photographic installation — which, by breaking rules and projective procedures, allow us to equate disruptive alternatives to a projective and illusory canon, or allow us to understand, in a playful way,

INTRODUCTION

how they work. The artist João Pombeiro also resorts to the manipulation of photographic images — mainly postcard-like images — to create video art. Using clippings from many different places, Pombeiro builds narratives that multiply viewpoints and vanishing points in order to escape beyond the image.

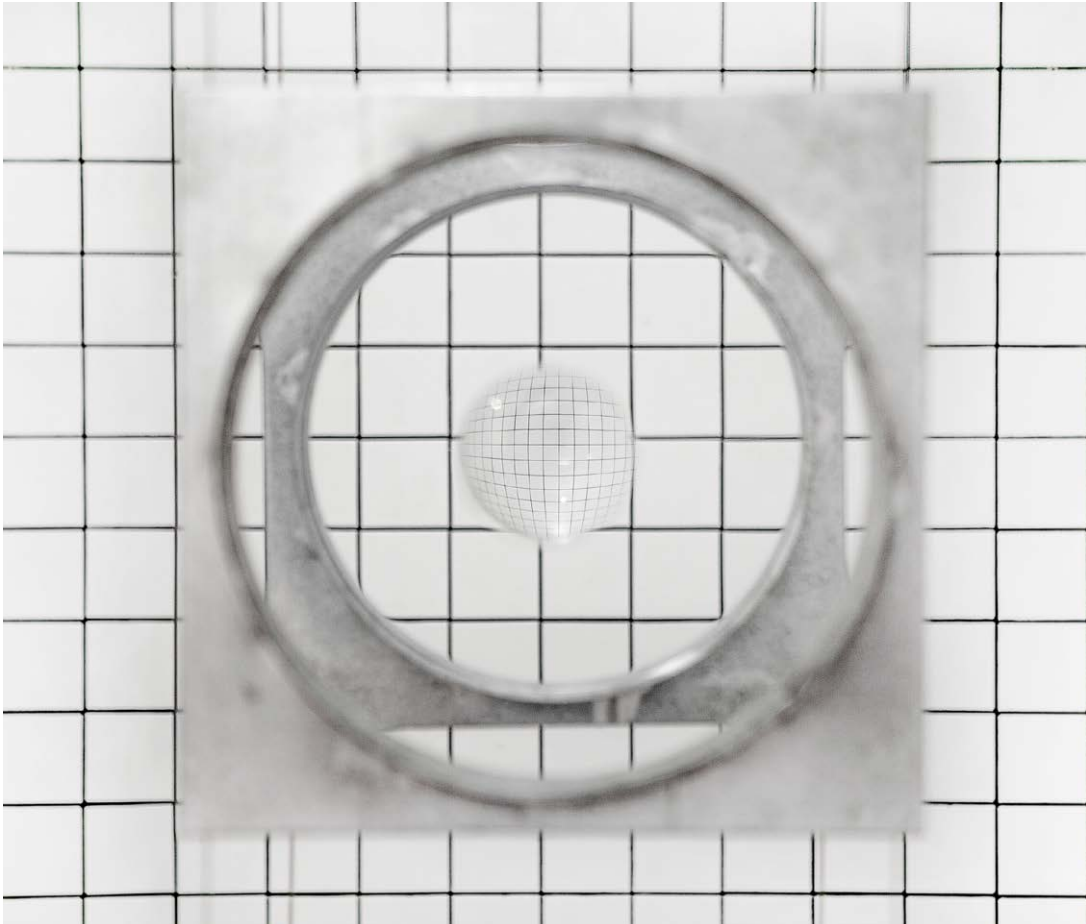
The fourth group of texts, entitled **politics**, brings together overtly ideological perspectives on illusion devices. Livia Koeche focused on artistic practices that question the monofocal image of city, its community and its symbols. She analysed reality on a broad scale, both physically (the space of the city) and temporally (the history of the city and its agents). Gaspar Cohen analysed *rendering* and *augmentation* as post-capitalist tools. He produced a critical analysis that focused not only on the consequences that these operative models have on the nature of space, but also on the social systems that they surreptitiously establish. Finally, Vítor Grilo Silva, rather than debating the illusion itself, proposed a cultural framework for considering it. He underlined the colonialist dimension of perspective that we enunciated in the call for papers when we stated that “This Cartesian device for space representation and consideration was crucial for the development of the continent’s art, architecture and scenography for several centuries, and its products were one of the cultural marks of European expansionist policy”. The artist Gil Madeira offers us pieces that work as devices through which we can see reality in a way that is ambiguously close to virtual realities, and, simultaneously, are sculptures.

João & José

Illusion and its mechanisms



Clara Imbert
Dis(places), 2018
Metal, magnifying Glass,
convex lenses, concave lens
50 x 300 cm



Trompe l'oeil as instrument of thinking

ABSTRACT

This paper starts from the idea that painting philosophizes about the nature and status of its representation. It argues that 17th century *trompe l'oeil* painting offers a theory on the subtle differences between truth, falsehood, deception, conception, illusion and disillusion, concepts that have become all the more relevant in our present-day society.

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In 1975, photorealist artist Richard Estes painted *Central Savings*. We see the front of a spick-and-span diner on a typical Manhattan street corner. The degree of brightness suggests mid-morning — and the clock in the centre tells us that it is a quarter past ten — yet the diner is completely empty. At first sight, this seemingly banal picture demands very little from us, as viewers. There are no symbols to decipher, no clues given as to what exactly is being depicted here.

Figure 1
Central Savings,
Richard Estes, 1975

Image courtesy Nelson-Atkins
Media Services, Jamison Miller.
Art © Richard Estes



Why have we paused here, in the middle of the sidewalk, whereas other passersby move on (we see their shadowy silhouettes briskly walking out of the frame)? What *they* remain unaware of *we* can see: overlaid upon the shiny red counter and its empty stools is the dazzling spectacle of a reflected cityscape extending *behind* us. What should have remained, strictly speaking, outside of our view is now contained within the diner. The dizzying doubling of reflections simultaneously bouncing of multiple shiny surfaces makes it difficult to determine what is inside and outside. Where, for instance does the orange and red 'banner' actually belong? And what about the silver strips running along the ceiling to the right? Something has entered this space that refuses to position itself, that refuses to take sides (are they in or are they out), but seem suspended in the middle, stretched out as it were in both. For a moment we forget that while looking *through* the large glass window, are also looking *at* it. The bright red letters spelling 'burger' in reverse projected at the window are also projected into the space from outside. When we bend in to study them closely we note that they must be part of the diner's front that falls outside of this painting's cropping. The backwards word has been projected into the space via its being doubly mirrored in the bank's windows opposite the diner,

such that this reflection brings it 'back' to the diner, and into this picture. Indeed, the term reflection comes from the Latin *re-flectere* that literally means 'to bend' and 'to bring back'. The reflections are brightly articulated and translucent, but remain somewhat impenetrable despite the transparency of the window. The result is a jumble of mirror images bouncing off each other. Are we being invited to reflect on reflection? What are we looking at?

Central Savings goes way beyond its own limitations in that it so radically presents itself as that *what it is not* — a photograph. Even *if* we know of photorealism, when this work is perceived from a distance of about a meter and a half, one won't be able to register that this is a painting. This work presents painting as replaced by photography, obviously referring to the master narrative that the invention of photography 'killed' painting. Within that narrative, photography is presented as painting's negation, its other. We could say, from a Hegelian perspective, that rather than being self-reflexive, Estes' painting is *self-conscious* by painting itself as its negative, attempting to 'think' itself as being "not-painting", or perhaps trying to "think" how painting would appear *as* a form of photography.

If we consider the grand narrative of realistic representation, we see realistic/figurative painting threatened in the Baroque era by illusionism in the shape of *trompe l'oeil*, and in the 19th century, photography was seen as the ultimate copy of reality, and was considered from the get go as painting's replacement, consequently putting an end to the aim and function it has had for centuries. The invention of photography threw painting into a crisis from which it only slowly recovered through a long period of self-analysis called modernism (and more recently, figurative painting has been making a great come back). For this presentation, I am less interested in what painting may have lost in the transformation in the wake of photography (such as the aura of authenticity as Benjamin would have it), but I am interested in what it has *gained* in terms of self-consciousness, for early modern as well as contemporary painting. One of the arguments that I would like to make — on the basis of Estes' work and other spacial illusions, is that painting is a form of thinking, capable of offering a thought, rather than a meaning or a narrative — and that painting can give us a way "into" philosophical issues by offering us, as viewers, an entrance to its pictorial realm, or a site where we can dwell.

Adorno once wrote that "art stands in need of philosophy that interprets it in order to say that which it cannot say, whereas art is only able to say what it says, by not saying it". For now, I will take an opposite stance, basically arguing that it is *philosophy* that needs *art* to say what it cannot say. Heidegger famously wrote that people often say that we cannot do anything with philosophy, while they remain unaware that in the end it is philosophy that does something to us. I would like to follow a similar logic for illusionist art: It is art

that does something to us, by raising questions, or by presenting to us a fundamental encounter that forces us to think (Deleuze).

In a recent book, I have made a case for a new category of immersive art works that is determined by their capacity to generate such an encounter, that I proposed to call 'pensive image' (Grootenboer, 2020). I define pensive images as those that confront us in such a way that our wonder about the work of art — its subject, matter or meaning — is transformed into our thinking according to it. Anamorphosis could be an extreme example of an image that forces you to look differently, and demand that we depart from patterns and pathways of seeing¹. Perspective possesses such a strong rhetoric, convincing us to look at the visible and overlook the invisible. But turned inside out, as with anamorphosis, it shows us the *other* side of vision. For now, I would like to look at another extreme form of perspectival painting, and that is the *trompe l'oeil* to which Estes' work has often been compared.

Estes | *Double Self-Portrait* (1976)

I suggest that Estes' painting is a pensive image that invites us "in" by raising philosophical issues, in this case literally and metaphorically linked to reflection. Few art historians or critics would care to see this "thought" in Estes' painting. An exception is Hal Foster who, in *The Return of the Real* (1996), discusses Estes' 1976 selfportrait. In the context of Lacan's theory of trauma, Foster uses Estes's *Double Self-Portrait* (1976) as an example of a contemporary model of pictorial reflexivity akin to Velazquez' *Las Meninas*. In *Double Self-Portrait* we see an empty diner similar to the one portrayed in *Central Savings*, in which various reflections and refractions are at the point of collapse. We may have been surprised to find in *Central Savings* only shadows of briskly walking passersby, but no photographer; in *Double Self-Portrait*, Estes included a reflection of himself proudly standing next to his tripod while pressing the shutter. With all of Estes's work, nothing is one-of-a-kind — everything carries its double with it. Further in, towards the back of the diner, a much smaller part of the torso of Estes's reflection is doubled in the mirror wall. Lkening it (via Jacques Lacan's comments on *trompe l'oeil*) to the kind of superficiality developed in illusionistic painting as deceptive surfaces with nothing behind them, Foster presents Estes's painting as a visual conundrum deeply rooted in capitalist spectacle, whereby the lines and windows of Estes's shopfront flatten pictorial depth, and thereby flatten psychic depth. For Foster, photorealism conceals reality rather than revealing it. But he seems to forget that photorealism represents a conundrum less about the real than about *realism, or rather illusionism as such*. If anything, photorealist painting presents us with a reflection, not of reality but of the way we experience reality through what we take to be its most reliable means of recording:

Figure 2

Reverse Side of a Painting,
Cornelius Gijsbrechts, 1680



photography. So many critics, like Foster, have attempted to explain away photorealism's extreme resemblance to photography as a lazy 20th century version of Baroque *trompe l'oeil* painting. The real link between photorealism and *trompe l'oeil* painting lies not, I suggest, in a similar sense of illusionism, but in their shared philosophical concern of that illusionism: what it DOES to us.

Reverse Side of a Painting by Cornelius Gijsbrechts

Early modern *trompe l'oeils* are ambitious art works that aspire to literally *become* the objects they represent. Their greatest wish is to overcome their limitations as two-dimensional images, so as to participate in the material world *as objects*. Probably the most perfect embodiment of this aspiration is *Reverse Side of a Painting* (1680), by Cornelius Gijsbrechts. This is an almost perfect paradox:

The *Reverse Side of a Painting* presents everything that *constitutes a painting*: we see a wooden stretcher, held together by several nails that cast small shadows on the construction. The stretcher frames the back of a painted canvas, its frayed edges visible between the wooden slats. But where is the image? If, like the curious visitor of the *Kunstskammer* in one of the palaces of the Danish King near Copenhagen, we would follow our inclination to turn this canvas around in order to see what is represented on its "front" side, we would realize that we'd fallen into a trap, and that the reverse side of this painting contains nothing but its own verso, this time real. At first insulting our perception, which detects the illusion only belatedly, this canvas has a second frustration in store: since there is no image, what meaning can be found in a painting that lacks

every quality that has defined realistic painting as such? The *Reverse Side of a Painting* lacks narrative; not a single object is represented; the picture depicts the opposite of a frozen moment in time; and, lastly, this *trompe l'oeil* lacks any suggestion of pictorial depth, realism's most profound condition. Whereas in realistic painting meaning may hide in the depth of the pictorial space created by perspective, for Gijsbrechts's *trompe l'oeil* there is rear or behind: the real verso and the painted one cancel out any suggestion of what is inside and what is outside of this painting. It leaves us in the end with an accurate painting of essentially nothing. We could say, with Victor Stoichita who wrote the modern classic *The Self Aware Image* (1993), that this is the ultimate self-aware image, that in the wake of iconoclasm had achieved full awareness of its being — and of its nothingness. Literally turning its back on painting, as well as on its viewer, this canvas intends to be its negative: it is an anti-painting.

Gijsbrechts's *Trompe l'Oeil Cabinet of Curiosities with Ivory Tankard*

A statement on the operation of this paradox is nowhere better articulated, I believe, than in Gijsbrechts's *Trompe l'Oeil Cabinet of Curiosities with Ivory Tankard* (1670). This painting represents a cabinet door with leaded-glass windows through which we see the contents inside the cabinet: an ivory tankard, the small figure of a horseman and some shells. Framed by panels of painted wood, the door has real hinges and can be opened just like any other door. A painted iron bar running across the window, with a quill pen and some letters placed behind it, competes with the real metal lock and hinges for realistic effect: the tactile quality of the iron bar is similar to the genuine lock and hinges, if not greater.

This window both shows and hides simultaneously: what we see behind the glass — items from a *Kunstammer* collection whose sole function is showing, and showing off — is partly covered by letters that themselves reveal only a few readable sentences. Our desire to see more of the art objects in the window results in the inclination to look around the letters, moving our head this way and that in trying out viewpoints that might give us a different angle of vision. Gijsbrechts's breathtaking virtuosity demonstrates its ultimate greatness in a deception that misleads even the most scrutinizing observer: the glass in the window is partly broken. A sharp fracture line cuts the lower right window in half, the upper part being slightly lighter than the lower part, indicating that a piece of glass has been removed. Real and painted transparencies are indistinguishable at the level of the fracture. It is precisely the clear-cut caesura of the non-existent glass that leaves no traces of its being made of paint, and leaves our eyes dazzled: Are we looking at glass,

Figure 2

Trompe l'Oeil Cabinet of Curiosities with Ivory Tankard,
Cornelius Gijsbrechts, 1670



or are we looking through it? Are we looking through a hole, or are we looking at it?

I believe that Gijsbrechts examines painting as the intersection of artificial and natural perspective. Whereas in natural perspective the invisible space through which our eyes travel is a condition for seeing, the art of painting requires the application of artificial perspective to generate a similar illusion of invisible space between objects in a picture. From the moment the first procedures for perspective were written down by Alberti in his treatise *On Painting* (1435), it has been understood as a method for transforming painting into a window. Gijsbrechts's ingenious broken window interrogates the far-reaching effects of Alberti's famous metaphor, not through demonstrating what painting is supposed to be according to Renaissance standards, but rather by representing that to which it has been compared in the centuries since. Instead of using the window metaphor to widen the boundaries of painting, Gijsbrechts brings painting back to its limitations by inviting us to look at a window through which we cannot see. The shallow pictorial space of the cupboard is filled with collector's items which are clearly visible behind the glass. What becomes more apparent, however, in its suddenly visible invisibility, is the window glass itself.

Gijsbrechts's door may further assist us in understanding the paradox of perspective because it hides an ingenious surprise. Unlike most *trompe l'oeils*, this one has a behind: its verso, the

inside of the cabinet door, also contains a painting that remains concealed as long as the door is closed. The verso represents the exact reverse side of the image: we see the back of the letters pressed to the glass, the quill pen protruding a bit.

While the “glass” in Gijsbrechts’s cabinet door already enables our gaze to pierce what looks like the first layer of the picture, this layer itself displays a puncture, facilitating our desire to peep in. But then, the double disillusion reveals itself dramatically. There is no difference between the glass and the hole; that which shows itself behind it is of the same order as the window; that is, the window is not a window at all, notwithstanding the fact that it shares all its major features, even incorporating a view from the reverse side. For when we open the door, we are astonished to find out that we are unable to look through the window from the other side. We are able to see both sides, but still cannot look “through” this image. What we do see is that which is always invisible both in regular paintings and in our perception, namely how things would look when seen from the other side, from the point towards which we direct our gaze, but from which we cannot see.

Gijsbrechts’s work indicates that perspective’s impact goes farther than providing a method of representation. If indeed his *Cupboard* makes something like a statement in painting, then it must be that perspective should be understood as laying out the conditions for vision and for the visible, rather than for representation. The conditions for vision and for the visible can be found on the other side of a cabinet door, as well as on the reverse side of a painting. There, mapped out by perspective, vision and the visible emerge as a thought in painting rather than its meaning.

Studiolo

As these examples demonstrate, *trompe l’oeil* painting does not merely deceive the eye but invites for philosophical reflections. In addition, *trompe l’oeil* painting takes in a special position in philosophical discourse. For instance, in his study on *The Fold: Leibniz and the Baroque* (1993), Gilles Deleuze describes the notion of the monad, as an inside without an outside, comparable to a Renaissance *studiolo*. The monad is an interior space that has furniture and objects painted in *trompe l’oeil*, Deleuze explains. Everything is there, but weightless, and as sheer appearance.

In an early essay entitled *The Trompe l’oeil* (1988), Jean Baudrillard states that *trompe l’oeil* transcends painting. It might flirt with painting (in the same way as surrealism might flirt with the history of art without truly been part of it, but, he argues, *trompe l’oeil* painting is *not* a representation as it seems to be opposed to the representative space that the Renaissance has created. Even though it is usually a vertical depiction of flat objects on a flat

surface, and therefore seems to be devoid of any suggestion of depth, it does have an additional dimension: a metaphysical one. Baudrillard states that *trompe l'oeil* is a kind of metaphysics: even though it plays with our senses, what it *actually* does is questioning the essence of reality, and the position of us in that reality.

For there is no nature in *trompe l'oeil*, there are only things, objects that are graspable and can be held in one's hand. What *trompe l'oeils* depict is a fundamental material world, which, Baudrillard argues, has nothing to do with our real sense of touch, and everything with "object-ivity" in the narrowest sense of the word. The depicted objects are all instruments, or tools, meant to be *used* (not to be looked at). In fact, there is nothing to see here: it is things that see *you*. "They bear themselves before you like your own hallucinated interiority." Baudrillard writes. What does he mean by that?

Samuel van Hoogstraten's *Feigned Letter Rack* of 1670

If we look at Samuel van Hoogstraten's *Feigned Letter Rack* (1670), we can further unpack Baudrillard's idea that things bear themselves before you like one's own hallucinating interior. In *Feigned Letter Rack*, we see a velvet-covered board attached to a wooden wall, with strips of red ribbon fastened to it. Various objects, such as a leather-bound book, scraps of paper, a letter, a penknife, a quill, scissors, combs, a golden chain with a dangling medallion, a pair of glasses, and a brush are placed behind the ribbon. All objects in Van Hoogstraten's *Feigned Letter Rack* are life-size and appear as if they are at a mere arm's-length from us. The apparent proximity of the objects is reinforced by the flatness of Van Hoogstraten's vertical composition, which does not allow for a horizon, with the result that our eyes cannot plunge into the depth of pictorial space. Instead of suggesting a space beyond the picture plane, the imaginary space that the perspectival configuration constructs moves forward, in the direction of the viewer, as demonstrated by the dog-eared pages of the booklet projecting out of the frame.

Van Hoogstraten's composition seems to be deprived of a human gaze, yet this absence betrays its existence *within* the painting in the form of an abandoned *pince-nez* that has been placed behind the red ribbon in the upper right corner. The transparent lenses stare at us but do not see, like empty sockets in a skull. There is no light, no shadow: The objects in these paintings are meant to arise out of nowhere so as to fool us, outsmarting our perception by putting us in our place. They triumph over our point of view and make us, at least for a moment, vision-less, or without any perspective: it is not that we see things, but it is things that see *you*.

Cut outs

Van Hoogstraten made a series of other works that are also meant to fool the eye and play with flatness and the illusion of depth that are referred to as cut-outs: paintings of apples, lemons slippers, salted fish on panel, cut into shape. According to Van Hoogstraten biographer, the artist's home was filled with these practical jokes that were put under chairs and in dark corners where they were easily mistaken for actual objects. These mundane yet playful creations by Van Hoogstraten have not survived but I show you here two larger examples that have, a children's chair and a cut-out painter's easle, by Cornelius Gijsbrechts. These objects have freed themselves even more from their painted backgrounds and have literally stepped into the world of things *as things*.

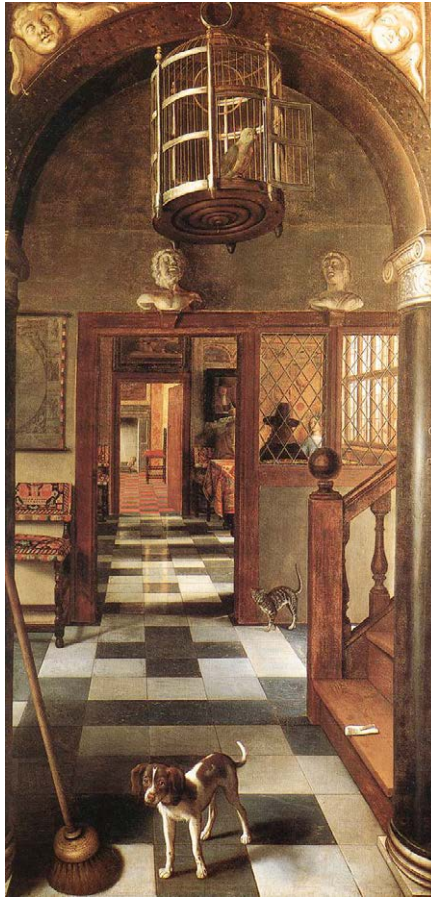
Even though Van Hoogstraten was a portrait painter, he excelled in *trompe l'oeil* and explored this category of painting in full. He painted several perspective boxes, one of them is currently in the National Gallery of Art in London. This box, one of six extant works, is a rectangular wooden cabinet about 60 cm high and one meter deep, and open on one side. Key holes have been made at either side through which the viewer sees a three-dimensional view of a 17th century Dutch interior that we know so well from the thousand genre paintings that make up Dutch realism. The panels are painted in anamorphic perspective and we can literally look around the nine rooms in this home. We are welcomed by a dog and see a letter on the doormat.

This box takes *trompe l'oeil* to another level by turning a two-dimensional Dutch interior into a three-dimensional illusionistic experience. It brings vision and painting as image-making processes closer together and is in that sense a theoretical object: a physical thing that is a kind of thought experiment, presenting a theory in visual terms. It also reminds us of Deleuze's description of the monad, governed by an inward spiraling force, in this case drawing our gaze ever deeper into its interior.

View through a Corridor

A wholly different example is *View through a Corridor* (1662). This work emphasizes the importance of site-specificity for such "perspectives" as they were called in the 17th century. This is a life-size depiction of a doorway that opens up to a deep enfilade of rooms. Our eye is welcomed initially in the hallway with the stairs, where we meet the gazes of a cat and a dog. Passing these animals, we are led into a sitting room where a man and two women are in conversation — we catch a glimpse of the man's face in the mirror, to the back room where a chair has been provided for us to rest. We are, however,

Figure 2
View of a Corridor,
 Samuel van Hoogstraten,
 1662



stuck at the threshold, simultaneously able and unable to get in.

In my exploration of pensive images, I have wondered about the comparison between interiors and interiority, and to what extent inviting images, like this one, serve as metaphors of the wandering mind. Thought has been defined in spatial terms as movement, while absorption in thought is often accompanied by a mental movement of retreat. Montaigne famously outlined his ideas on modern stoicism and recommend that we must reserve a “backshop” (*arrière-boutique*) wholly our own and entirely free, where we can think. This innermost *sanctum* is likened to a kind of study, where we find, besides our true solitude, a philosophical home. Heidegger defined thinking as a going-through, as a journey that will take us in the direction of our philosophical home. Could a painting like this, precisely because of its perspectival illusion, “draw us in” the way Heidegger intended? Is our longing to reach that back room with the chair at the end of the enfilade a way of withdrawing in our selves? Could this perspective serve as a model for a mental retreat? My question is less about what thinking actually is, and more about how artworks, illusions in particular, have enabled us to find an interior space to house our thought.

Perspective with man reading

My argument for this interpretation of *View through a Corridor* is further supported by a series of grand-scale perspectives that Samuel van Hoogstraten created, where again we are met by pet animals (a cat and a dog). Those paintings are totally overwhelming, due to its dimensions, to the extent that one can look around in them. And what we see is more “seeing-through” moments: there are windows and doorways, staircases, balconies and loggias, where we can dwell — visually but also mentally. The staircase is a well-known metaphor (dating from the middle ages) for the ascension of thought, and in these grand perspectives, Van Hoogstraten’s figures are without exception, reading. They are absorbed in thought, unaware, it seems, of the enormous space that surrounds them, and unaware of our gaze.

There is a strong connection between some of Van Hoogstraten’s illusions, and his notion of self. His *Feigned Letter Rack* can be seen as a kind of self portrait: the things we see are his personal possessions and other memorabilia: the golden chain has been given to him by Habsburg Emperor Ferdinand II who was delighted by his illusions, while the books we see are published plays by his hand. Van Hoogstraten was not only a brilliant painter but a brilliant writer as well. Apart from the plays, he wrote a hefty treatise, *Introduction to the Academy of Painting, otherwise the Visible World*, that was published in 1678, in which he defined painting as follows:

The art of painting is a science which allows us to represent all the ideas or notions the entire visible world can provide and to deceive the eye with outline and colour... For a perfect painting is like a mirror of nature which makes things which are not appear to be and which deceives us in an admissible, diverting and laudable way.

Van Hoogstraten continues to explain the task of the painter as creating “infinite reflections”, referring not just to mirror-images, but also to the philosophical dimension of painting as such. The art of painting, Van Hoogstraten claims, as an essentially “reflective art” “a sister of reflexive Philosophy”.

As in Estes’ image that I started with, reflection is for Van Hoogstraten multifaceted: it is superficial (a mirror) as well as deep (infinite), and this is further emphasized in Van Hoogstraten’s claim that experienced painters do not just present “things” but the ideas and thoughts surrounding things. The term he uses is *Denkbeeld*, literally translated as Thought-Image. In 17th century Netherlands, this notion was used interchangeably with “idea” but towards the end of the century it takes on the meaning of an intricate image that articulate thought, and that is worth contemplating.

A pensive image presents such a “denkbeeld” or “thought-image”: These immense perspectival images are huge spaces that may be empty of action, and that do not contain thought or mean “thinking” but are filled with thought. We can draw a parallel from this use of the term *Denkbild* to Walter Benjamin’s definition of his short prose poems as *Denkbilder*. For Benjamin, a *Denkbild* is a visual image that shows something that cannot quite be “said” in words, but that CAN be thought. Benjamin’s *Denkbild* is a hindrance, a stumbling block of words that gives rise to an image that “strikes” you and that stops you in your tracks. Benjamin once said that “Thinking involves not only the flow of thoughts, but their arrest as well”. *Trompe l’oeils* in general, and Van Hoogstraten’s perspectives in particular, offer us great insights, that are at the same time hindrances: standing at the threshold at the doorway, or on the stairs, we “see” where we can go, but the construction of this illusionistic space stops us in our tracks.

In this context, and by means of conclusion, I cannot resist the temptation to ponder on the philosophical potential of the *trompe l’oeil* titled *Still Life with a Flower Garland and a Curtain* (1658) by Adriaen van der Spelt and Frans van Mieris, at the Art Institute of Chicago, often labeled as self-reflexive through its reference to Pliny’s famous anecdote about Zeuxis and Parrhasios. Immanuel Kant once wrote that, to be able to think, we only need to draw a curtain to separate us from the world. This image begs the question if it dupes us, in inviting us to draw the *trompe l’oeil* curtain away to start studying the painting as a whole, or whether it can be said to make a Kantian gesture *avant la lettre* by showing itself attempting to think. Even more so, the very indecision as to whether the curtain should be opened or closed, or left as it is, could leave us, as viewers, wondering on which side of the curtain we actually are. I suggest that it is the indeterminacy of the status of this curtain, of this painting, either wanting to retire behind the curtain in order to think by and for itself, or offering us a space of contemplation, that makes it a pensive image, and that invites us to join in a mutually effort to think though illusion.

Notes

1. (Editor's note) In the conference, Hanneke Grootenboer referred specifically to Agostino de Rosa's presentation "The apocalypse of optics, the eyewitness of the Apocalypse: time, space and illusion at Trinità dei Monti."

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What is wrong with *trompe l'oeil*

ABSTRACT

Richard Wollheim's seeing-in theory is one of the most powerful and ductile philosophical accounts of depiction. It portrays the experience of art as the phenomenon of conscientiously acknowledging something being represented in a material support. A disturbing consequence, however, and one fully endorsed by Wollheim himself, is the disavowal of the representational status to all graphic forms that deny the viewer the twofold experience of the represented object and of the “marked surface”. This anathema affects hyper realist works but also, and most significantly, *trompe l'oeil* painting. After surveying Wollheim's arguments we propose a different solution, by entertaining the thought that it is possible to have a kind of aesthetic seeing-in without the need for a perceptual seeing-in.

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WHAT IS WRONG WITH TROMPE L'OEIL

Two friends, A and B, are visiting the Nelson-Atkins Museum of Art in Kansas City. Upon entering in one of the exhibition halls they notice a painting on a tripod placed in a corner of the room. A admires *Venus Rising from the Sea*, a painting by the American artist Raphaelle Peale (1822) which constitutes an intriguing partial copy of an earlier work with the same title by Irish painter James Barry (1791). She utters a remark so as to draw her friend's attention to the exquisite *trompe l'oeil*. B replies "Humm, there must have been complaints." (Meaning that maybe the painting was considered too sexist or too erotic.)

Figure 1

Venus Rising from the Sea
— *A Deception*,
Raphaelle Peale, ca. 1822



The two friends had two very different experiences of the object held in the tripod. A acknowledged it *prima facie* as a painting and admired its technical prowess accordingly. B however mistook it for a painting covered with a rather large napkin hanging from a thread. In order to get to the moral of this story we need to consider at least three questions. First, does B's early experience amount to any kind of representational seeing given that she really thought a real napkin was hiding the *actual* painting? Second, does A ever get to experience the painting as a *trompe l'oeil* given that she recognized it *prima facie* as a deception? And third, what was Peale's categorial intention in creating this work of art — and how is the category of *trompe l'oeil* pictures related to the more general

category of pictorial depiction? The latter question leads to the related issue of how to understand *trompe l'oeil* as a pictorial genre. Does the success of any *trompe l'oeil* necessarily involve deceiving the viewer into believing she is perceiving something other than a bidimensional rendition, or is the awareness of the illusion a necessary condition for properly experiencing *trompe l'oeil* pictures? If the latter, then only A had a proper experience of Peale's painting. But if the former is correct, then it is B who indeed experienced the painting as mandated by the author and the rules of the genre. Now, this second hypothesis, fascinating as it may be, leads to a complex and inconclusive philosophical discussion of whether *trompe l'oeil* pictures should be classified as a pictorial genre at all, given that they require, for proper enjoyment, that the viewer ignores that she is contemplating a pictorial depiction. In other words, how can one entertain a pictorial experience of a painting that requires, for proper enjoyment, that one dispenses with its pictorial nature? For lack of a better expression, let us call this an artistic *contradiction*.

Trompe l'oeil pictures have become a philosophical topic because they constitute a serious problem for those theories of picture that grant a special role to the viewer's awareness of the pictorial means for representation, namely, the awareness that one is looking at marks in a surface, that the author is transposing a tridimensional reality into a bidimensional rendition, that one should pay attention to the brushwork or indeed the lack thereof, the contour, punch mark, aerial perspective, the ruggedness or smoothness of the surface, fineness of detail or sketchy and raw execution.¹ According to these medium-oriented theories, to be aesthetically involved with pictures necessarily means that the spectator is interested in the *making* of the work, i.e., the particular way in which the representing surface was produced.² This opens up another important aspect of our aesthetic enjoyment of art, namely that we are always probing the ways in which the painting's plasticity or its material implementation hold symbolic meaning, or to put it in other words, how the artist's particular choices in her treatment of the medium makes us see an object presented in a quite unique way. Arguably the most notorious of such theories is contained in Richard Wollheim's aesthetics of painting. Most notoriously, *trompe l'oeil* pictures became a subject of aesthetic controversy after the sort of anathema that Wollheim has thrown upon them, denying them the status of pictorial depiction and withdrawing them from the realm of proper representation. Whatever they may be, *trompe l'oeil* pictures are not depictions. The reason for this cancelling lies in the fact that *trompe l'oeil* pictures work in contradiction to the kind of representational seeing that Wollheim describes as the basic tool for the perception of pictures. He calls this *seeing-in*.

Wollheim's seeing-in provides a sure path towards finding a reply to the three above mentioned questions and to explore the issue of *trompe l'oeil* pictures and the particular instability they

provide between the bidimensional medium and tridimensional perceptive awareness. First of all, we must start by understanding how seeing-in acts a tool for pictorial comprehension. Wollheim describes seeing-in as a basic perceptual ability with the function of identifying an object in a marked surface. To discover the faces of famous actors in the clouds hovering our heads, to recognize wild animals in the humidity stains of a wall, or to identify the face of a young woman in a Vermeer painting, are all instances of seeing-in. They all have in common the simultaneous twofold awareness of both a) marks in a surface (the configurational fold) and b) the emergence of a foregrounded and bounded object (the recognitional fold). Notice that, in order for the recognitional fold to manifest itself all that is required is that the viewer is able to perceive that there is one object *in front* of another. The protruding, receding or occluding of objects among themselves, or in relation to the painted surface, is all that is required for proper recognition of a depicted object to occur. This constitutes an important edge of Wollheim's theory of painting *vis-à-vis* other theories (such as Ernst Gombrich's partial illusion theory) because it allows him to encompass within the breadth of representational art the wide range of abstract and non-figurative art. Once abstract art gets accepted aboard the vessel of representational painting, the only difference between abstract and figurative art lies in the kinds of concept we use when we want to refer to that which is seen in the marked surface. When viewing figurative art, we use figurative concepts such as "boy", "ship" or "flower". In abstract painting we use abstract concepts such as "sphere", "space", or "depth".³ They both constitute nonetheless genuine cases of seeing-in in different kinds of representational art.

Essentially, we cannot classify something as a depiction that does not allow for this twofoldness, or somehow expects the viewer to dispense one of its folds. Thus, the gamut of pictorial depiction is confined, on the one side, by works (we should hesitate to call them "pictures") in which there is, so to speak, nothing to see, i.e., marked surfaces that don't offer the minimal basis required for the viewer to entertain the thought that she is looking at an object in a surface, not even the slight hint that could induce awareness of depth.⁴ That would be the case of Barnett Newman's *Vir, heroicus, sublimis* (1950-51).

The other side of the gamut confines with that kind of work that demand from the viewer that she suppresses awareness of the marked surface in her visual experience. That is precisely the case of *trompe l'oeil* pictures, that negate the role of the recognitional fold and consequentially the twofoldness characteristic of the seeing-in that defines the pictorial experience: "[Some] paintings are non-representational [...] because they do not invoke, indeed repel, attention to the marked surface. *Trompe l'oeil* paintings are surely in this category."⁵

Thus, seeing-in is a necessary condition for representational seeing and proper experience of pictures. But it is not sufficient because, as the case of famous actors in the clouds show, we can have manifestations of seeing-in outside the realm of depiction. Therefore, Wollheim introduces a second condition for the obtaining of depiction and that is constituted by the painter's intentions, or more exactly, by the viewer's awareness that the surface in front of her was intentionally designed. Notice that she is not required to grasp (at least not at first) nor to be informed of the real intentions of the author. All that is required is that she knows that the picture is intentionally laden. The picture's motivation — its *design* — will then act as a sort of more or less conscious criterion for assessing which interpretation of the picture is the correct one — a standard for correctness. Something which is obviously absent from our twofold experience of clouds *qua* famous actors. If my friend denies that the face of Kristen Stewart is presented in the cloud above us, there is nothing I can do to prove her wrong. But if she is not able to see Dora Maar in one of her portraits, I can always use Picasso's intentions to condition her recognition of the portrait.

But when we get to this point, we plunge into some rather muddy waters. In order for some visual surface to be classified as a depiction, it must support twofoldness *and* be an intentional object. This assumes the form of a definitional implication:

(p) a is a depiction if (q) a supports twofoldness and (r) a is an intentional object: $p \supset (q \cdot r)$

Trompe l'oeil pictures negate (q) because they supposedly expect the viewer to ignore the configurational fold, as was the case with friend B in our initial example. However, if we resist that suppression and deny ourselves the possibility of being deceived, in some way or another, by the marked surface (friend A's experience), then we negate r because we are not experiencing the object as it was intentionally designed by the author. Either way, p is not the case.

Another contradiction seems to arise here for although we recognize the whole object as a painting and thereby acknowledge the surface as an intentional object (otherwise we'd be already deceived and not be able to acknowledge the illusion, like in the case of friend B) we are *ipso facto* unable to follow the author's intentions, which should be assumed as the standard for correctly engaging with the object. In order to assume the painting as an intentional object we have to somehow dismiss the fact that the author's intentions constitute the standard of correctness for pictorial seeing and, to some extent, prescribe the proper way to look at a picture.

To sum up the problem:

WHAT IS WRONG WITH TROMPE L'OEIL

- a) In order to have proper representational seeing we require twofoldness and be willing to abide by the intentions that originated the depiction.
- b) Friend A does not suppress the configurational fold (either because she is not willing or no longer able to do so) and thus does not experience the work as *trompe l'oeil* but as a depiction — arguably, the fact that the illusion is not held makes the entire project a lesser work, if indeed deception was the intention of the author.
- c) Because she *prima facie* acknowledges the work as a depiction, she is *ipso facto* aware that the work is an intentional object, and that the author's intentions provide a standard for correctly viewing the picture. But then she is not able to experience the work according to that standard, which entails that she is not willing or able to see what the author wants her to see. Even worse: in order to keep twofoldness she has to ignore the author's intentions as standard for correctness and thus the two conditions for depiction seem to go against each other.
- d) The second friend is unaware of the configurational fold and thus *suffers* the work literally as a *trompe l'oeil*.
- e) Although she is unaware of the illusion as an intentional object (or she may reserve intentionality to the picture that she falsely believes is hidden behind the napkin), she is indeed following the standard of correctness constituted by the author's intentions, which also means losing twofoldness.

Let us now return to our previous set of questions. Does the second friend's early experience amount to any kind of representational seeing? According to Wollheim's model, we should reply "no" because (1) she lacks any attention to the configurational fold and is therefore not experiencing the object as twofold, and (2) she is also not aware of the intentionality behind the existence of the entire object. *However*, she is actually corresponding to that standard by perceiving the object in the proper way and therefore, albeit in a quite peculiar fashion, she is entertaining some kind of representational seeing.

Does the first friend ever get to experience the painting as a *trompe l'oeil*? According to Wollheim's model, the answer is also negative. Notice that Wollheim does not consider non-delusional experiences of *trompe l'oeil* as proper *trompe l'oeil*. *Trompe l'oeil* is *ex definitione* designed to baffle and repel the viewer's attention to the marked surface.⁶ It could be argued that in *trompe l'oeil* illusion itself becomes the topic and the aesthetic focus, and therefore in order to properly appreciate it the viewer should be able to move between letting herself be tricked and bouncing back to a distanced view of the painting.⁷ But this wouldn't do basically because there is a

normative constraint regulating how *trompe l'oeil* pictures should be experienced, namely, being tricked into thinking we are facing a tridimensional object, which implies experiencing the depiction as something different from what it is. *However*, only the first friend is able to recognize the painting as an intentional object and although it may be argued that she won't be able to correspond to the standard of correctness for watching the painting, she is in a position to value her friend's mistake as ultimate evidence of the author's success.

But why should we accept Wollheim's thesis that twofold seeing is required in pictorial experience? Well, first of all, it is significant that such a basic ability carries enough weight as to become the main tool for the appreciation of art. Given sufficient information, it is a tool for understanding the many symbolic levels generated by the synergy between the configurational and the recognitional. Sometimes it is the configuration that elaborates on the recognitional. A significant part of the pleasure that we derive from appreciating art derives from our identifying how certain formal traits of the configuration provide a commentary or a symbolic modulation of the represented object. Some other times it is the recognitional that provide the viewer with a guide to the configuration. Another source of such pleasure is constituted by identifying how the recognizable object makes aesthetically salient some (but not all) features of the marked surface.

The interplay between the configurational and the recognitional folds is manifold and unpredictably rich. It can be the function of a number of often very unexpected factors joined together in the kind of pleasure that we tend to seek in our aesthetic transactions with artworks. Take Sassetta's *Saint Francis and the Poor Horseman* (1437-1444) [Figure 2] as an example of this interplay.⁸

Sassetta chose to use lapis-lazuli as pigment for colouring the cloak that Saint Francis offers to the Horseman. Sassetta's contemporaries — and particularly his patrons — knew exactly how expensive this pigment could be (and still is). The material used — a straightforward component of the configurational fold —, when properly recognized by the viewer, increases the generosity of Saint Francis' gift and thus makes the recognitional fold more precise.

Quite often this interplay is ignited by certain configurational "anomalies" that, as it so happens, are there to guide the viewer's recognition of the depicted object by making salient a particular element or an otherwise neglected layer of the representation. This is the case with Anthony van Dyck's *Equestrian Portrait of Charles I* (1637-1638).

Hanging on the wall well above the visitor's vantage point, it seems obvious that Van Dyck clearly meant the horse and the king to be observed from a lower perspective. That explains why we see the belly of the horse or the sole of the king's boot. To assume that perspective is also important in order to explain the strange disproportion between the horse's torso and its head. However,

Figure 2

Sassetta, *Saint Francis and the Poor Knight, and Francis's Vision* (From Borgo del Santo Sepolcro Altarpiece), 1437-1444.



if this was indeed the realistic perspective organizing the entire scene, why is Charles I's face designed as if the king is looking straight at the viewer's eyes, i.e., as if we are no longer looking upwards but at the same level as the king? The dual focal point in the configuration introduces instability that shakes the superficial realism of the entire picture and prompts the viewer into searching for other layers in the recognitional fold. She could, for instance, start entertaining the idea that maybe Van Dyck's intention was not merely to portray the king but his political agenda, a sort of *primus inter pares* interpretation of absolutism of the kind he so admired as a young prince visiting the courts of his French and Spanish cousins. A political program that ignited the Puritan Revolution and led to Charles I's own demise.

Both cases exemplify the power of seeing-in as an explanation of pictorial experience. The theory also holds its value against other very strong competitors. When compared to its most immediate rival, Ernst Gombrich's partial illusion theory, it offers a much more simple and straightforward phenomenology of our experience of painting. Instead of an alternate attention either to the marked surface or to the depicted object, the twofoldness thesis grounds our experience of depictions in the more basic ability of seeing an object in a marked surface. Also, Gombrich neglected the role played by the artist's intentions in our perception and

interpretation of pictorial art. To Wollheim, the standard of correctness composed of these intentions constitute a fundamental condition of pictorial experience, by upgrading common seeing-in to the level of intersubjective appraisal.

Seeing-in theory is also a formidable opponent of similarity-based theories of picture. Fundamentally, because seeing-in grounds representational seeing in the relation between a marked surface and a represented object, and not in a comparison / similitude between the represented object and the *real* object. Many authors, such as Nelson Goodman, have successfully argued that visual similarity occurs after and not prior to representation and cannot thus qualify as the epistemic basis for the latter. As the extreme case of caricatures eloquently show, it is often a manufactured representation that generates the set of similarities upon which the viewer will then juxtapose the real object and its depiction.

However, and contrary to conventionalist views, such as Goodman's, or imagination-based theories of picture, such as Kendall Walton's, Wollheim insisted that seeing-in is a kind of perception not a top-down cognitive state or a kind of imagination. Imagination is, to great extent, an act of will but seeing-in is, at least most of the time, an involuntary exercise. As soon as the visitor enters an exhibition room in the art gallery, she *recognizes* men and women, animals and flowers in the canvas hanging on the wall. Viewers tend to pay close attention to the details in the marked surface and to consider how these marks condition the way the represented object should be perceived and interpreted. An imaginative appreciation of art neglects or ignores the marked surface because the appreciation of art is a mental affair and the object is but a prop that affords such elaboration.

Now, Wollheim had very specific purposes in mind when he developed his theory of depiction based on seeing-in. First, by noticing how depiction demands the exercise of a very clear perceptual skill ("seeing-in"), pictorial depiction could now be again analysed in a very objective and non-relativistic way. Accordingly, painting was retrieved from the dominion of conventionalist views such as Nelson Goodman's or Louis Marin's, in which depiction was perceived as having a semiotic nature, and pictures were described as conventional symbols working in a way not unlike other symbolic systems, such as notations or verbal language. Second, seeing-in made it possible for the broadening of the realm of pictorial depiction so as to encompass genres traditionally deemed to be more eccentric, like abstract painting, that were now rehabilitated as appealing to the very same perceptual skill — for the recognitional fold to be present the awareness of a simple juxtaposition of surfaces was sufficient. Third, seeing-in rehabilitates one of our "most basic intuitions about painting", namely that depiction is essentially a perceptual phenomenon

(and not a cultural, imaginative or conceptual one). And fourth, his theory showed how this perceptual skill, employed in such a basic function as that of identifying an object in a marked surface, could also be used, given sufficient information, to understand the different symbolic levels in which the represented object may acquire meaning.

On the other hand, however, seeing-in was presented as an extremely elusive phenomenon and one very difficult to fully explain: “[t]he nature of the perceptual kind of which the seeing-in is a species is [...] very difficult to characterize”⁹ and “[n]ot all the marked surfaces will have this effect, but I doubt that anything more can be added regarding the exact way in which a marked surface has to be produced in order to hold such effect.”¹⁰

In support of twofoldness as the basic experience on which our representational seeing is built, Wollheim would add two main arguments, one psychological and one historical. The psychological argument, derived from the work of Maurice Henri Pirenne and Michael Polanyi, drew attention to the “perceptual constancy” of representational seeing.¹¹ If we look at a real object, say a table top, and then we move to one side, there occurs a distortion in perspective. The top looks more like a trapezoid than a rectangular shape. But that distortion does not occur in the case of depiction. If we are looking at a painting of a table straight on and then we move away from the centre of the canvas, the shape of the table top remains the same. The fact that no shift in perspective takes place in the case of depiction is explained by Wollheim through twofoldness and the fact that the observer is constantly aware not only of the depicted object but also of the marked surface.¹² Notice that *trompe l'oeil* does not seem to comply with the principle of perceptual constancy. In fact, *trompe l'oeil* is subjected to perceptual *inconstancy* because as soon as the viewer moves away from the ideal vantage point, rectangle become trapezoid shapes. Since perceptual constancy constitutes a necessary condition for depiction to obtain, *trompe l'oeil* painting cannot be included in that category.

The second, historical argument reviewed twofoldness as constituting a normative restriction of the way pictorial artworks are traditionally appreciated and underlined the fact that proper interpretation of paintings has historically been involved with providing an account for the interaction between the configurational and the recognitional. An example proves particularly eloquent in this regard.

Heinrich Wölfflin famously described Raphael's *The Expulsion of Heliodorus* (1512) as affected by a “great void” in the centre. Wölfflin acted as a sort of ultimate formalist critic and art historian recurring whenever possible to the jargon of geometry and visual dynamics in order to describe compositional technique. However, and quite significantly, even a staunch formalist such as Wölfflin could not dispense with referring the shapes or forms he was analysing back

to the characters or events depicted by those formal configurations. It is only through his reference to the actual story of the expulsion of Heliodorus that Wölfflin's formalist assessment of the fresco's configuration makes sense:

It is hard to see how could someone 'read' the void in the middle without being simultaneously able to acknowledge the spatial relationships between Heliodorus and the young men that come to mock him, or between the Pope and the scene he contemplates in calm detachment. [...] ¹⁵

On the other hand, the full significance of what is there for the viewer to recognize only becomes apparent through proper perception of how the scene depicted is engendered by the intentional disposition of the marks in the wall:

The representational attribution of the painting as a whole is dependent upon the specific attributions (that the painting has depth, great movement, diagonal recession, etc). ¹⁴

Wollheim's idea of what constitutes pictorial understanding through the ages, was in deep contrast to Ernst Gombrich's cumulative notion of art history, according to which art proceeded on a steady path towards the goal of partial illusion, in which awareness of the marked surface becomes negligible: "[i]n the course of time, artists have in fact succeeded in simulating one after the other of these clues on which we mainly rely in stationery one-eyed vision, and the result is that mastery of *trompe l'oeil* illusion in which painting beat photography by a few generations."¹⁵ And this may very well be the main reason behind Wollheim's discomfort *vis-à-vis trompe l'oeil* paintings.

Once we accept that simultaneous and unlimited attention both to the medium and to the work's meaning or content (be that the object we see depicted in the marked surface) constitutes the core characteristic of any pictorial experience, we are ready to remove *trompe l'oeil* paintings from the universe of pictures that afford authentic pictorial experience. In the case of *trompe l'oeil* paintings, attention to the marked surface is only possible at the expense of losing the optical delusion which was the author's intention when producing that painting.

There is another reason for discriminating *trompe l'oeil* painting and proper depiction. The fact that we have to somehow suspend our judgment that we are watching a marked surface in order to properly engage with the illusion, turns *trompe l'oeil* paintings into a special case of seeing-as — we see either the marked surface or the illusion, but we cannot be aware of them both at the same time. Now, the experience of seeing-as is subject to the *localization requirement* whereas seeing-in is not.¹⁶ When looking at

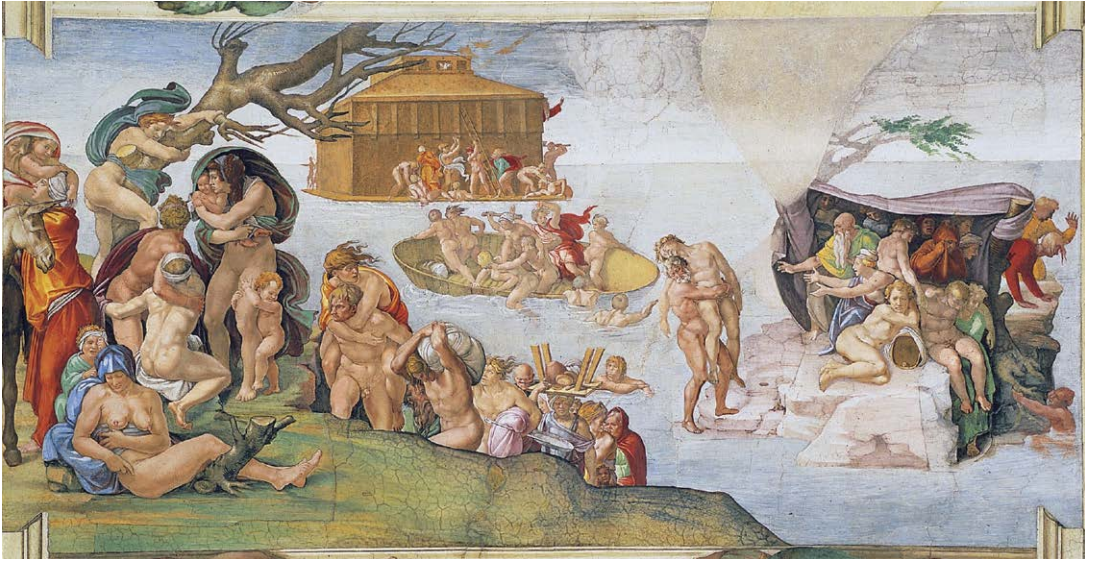


Figure 3
The Deluge,
 Michelangelo, 1508–1512

Salvador Dalí's *Slave market with the disappearing bust of Voltaire* (1940), if someone is unable to detect the two nuns lurking in the bust of Voltaire, we can always point to the eyes of Voltaire and localize the heads of the nuns.

However, if I say to someone that I see a crowd in Michelangelo's *The Deluge* (1508–1512) [Figure 3] and someone else asks me where exactly the crowd is, I may “refuse” to give an answer because, in a very important way, that question is meaningless: I cannot point to *the* crowd where only a few members are not “obscured from view by a fold on the ground”.¹⁷ But I may properly say that I *see* the crowd nonetheless.

Perhaps even more significantly, *trompe l'oeil* painting and pictorial depiction possess opposing epistemic demands. On the one hand, the *artistic* success of *trompe l'oeil* paintings vary in reverse ratio to our knowledge about them: as the case of the two friends showed, the less we know about the displayed object, the better. On the other hand, however, “proper” artistic depictions increase their aesthetic value as the spectator becomes more and more informed and experienced, as the case of Sassetta's *Saint Francis and the Poor Horseman* exemplifies. But it also becomes apparent once we consider the way spectators entertain different “rival perceptions” of the same configuration and how some of them are distinctively more valuable than others, namely because they make us see more things in the painting. Take the case, for instance, of Erwin Panofsky's discussion of Rogier van der Weyden's *Vision of the Magi* (circa 1450).¹⁸

In order to underline the importance of iconographic analysis of painting (i.e., the kind of analysis that takes into account the symbolic value of the work), Panofsky noted how difficult it would be to present a pre-iconographic description of the Van der

Weyden's panel. For that description to be possible, one would have to ignore concepts such as "Magi" or "Child Jesus", although it would be impossible to ignore that a baby was hanging in the sky. Depending on her level of information, the viewer could entertain three different rival perceptions. First, on an extreme pre-iconographic level, she could interpret the suspended circle, for instance, as serving as a claypigeon for the three men in what would then become a scene of skeet shooting.¹⁹ On a second level, the suspended figure could be perceived as indeed a real human baby in the sky. But on a third and fully iconographic level, it would be correctly interpreted as an apparition, as the result of knowing what Panofsky designated as the "history of style", i.e., the pictorial conventions at the time of Van der Weyden's creation. This information then acts upon our perception of the painting's configuration in a remarkable way: the suspended apparition becomes its true symbolic centre and a heuristic signal guiding the three Magi's journey and the viewer's gaze towards the right, to the centrepiece of the Bladelin tryptic in which the Nativity is depicted. Even more significant in the way it alters the viewer's perception, because the child in the Nativity scene and the apparition in the right panel are identical, the golden circle is easily perceived as a sort of magical looking glass through which the Magi are already anticipating the contemplation of the new-born. As Panofsky points out, it is our knowledge of the pictorial conventions governing the motif of apparitions that makes us see the Child Jesus in that part of the canvas; we don't just infer from the presence of the suspended child that it is Jesus. This *augmented vision* makes us see-in something that we would otherwise miss.

Finally, *trompe l'oeil* is distinct of "proper" painting because it does not have a particular perceptual experience that determines their content. The more successful *trompe l'oeil* are those that will deceive the observer in a wider range of perceptions and points of observation, whereas painting usually requires the observer to place herself at a given position in order to get the "appropriate experience".²⁰

One way to try to solve the apparent distinction between *trompe l'oeil* painting and proper painting is to consider *trompe l'oeil* as a kind of piecemeal pictorial experience, in which the observer is at first affected by the illusion and then "recovers" from the illusion in order to attain a more vivid kind of seeing-in in which she (finally) experiences both the marked surface and the item it presents.²¹ When we finally realize that we are facing the *trompe l'oeil* and not the object it presents, we can still *see* the *trompe l'oeil* as such an object although we no longer *believe* it to be that object; quite the contrary, we now believe it is *not* that object. Now, it could be argued then that at that point we engage on a twofold seeing-in experience in which the illusion, or rather, "knowingly" mistake the picture's configuration for another object, becomes one single

fold and the equivalent to the recognitional fold of Wollheim's twofold experience. In a way, it is a more radical experience of seeing-in because the content of that recognitional fold amounts to an experience *as of* that other object — a knowingly illusory experience.²²

This suggestion implies that *trompe l'oeil* painting should be categorically distinguished from other illusory experiences, such as the Müller-Lyer arrows [Figure 4].

In the case of the Müller-Lyer illusion we experience a property that the picture does not possess, namely that the two horizontal segments have different lengths — it constitutes a false experiential ascription of a property, a false experience. In the case of *trompe l'oeil* pictures we *knowingly mistake* the picture's vehicle for another object — it constitutes the experience of a deception. If we include that deception in the items we are supposed to recognize in the picture, then *trompe l'oeil* joins the ranks of twofold pictorial experience given that one sees the “pictorial vehicle” in the configurational fold and one *knowingly illusorily* sees that vehicle as the object. Thus, the recognition of *trompe l'oeil* as such involves a twofold experience and so, *pace* Wollheim, *trompe l'oeil* paintings qualify as proper depictions and hold figurative value.

This way out of the conundrum, however, seems too good to be true. The fact that we recover from most (if not all) *trompe l'oeil* paintings is irrelevant to the case raised by Wollheim, because he wants to consider the normativity associated to *trompe l'oeil ex definitione*, i.e., as “pictorial presentations” (Feagin) that are to be perceived under the perceptual mode prescribed by the genre (like the one followed by the friend A). And under that mode, skillful deception prevents any kind of “knowingly illusorily seeing”. Therefore, if we call “*trompe l'oeil*” to the experience we have when we “recover” from the illusion, what should we call the pictorial deception as it takes place? Wollheim thinks that true *trompe l'oeil* (*trompe l'oeil qua genre*) corresponds to the actual deception and that to ignore this would be tantamount to reject the author's categorial intentions (i.e., the way in which the painting should be perceived). In proper depiction there is a pictorial *contract* between author and viewer: the author lays down something for the viewer to discover. Instead, *trompe l'oeil* is based upon the spectator's ignorance. A little bit of information is already enough to lead to the dissolution of the presentation and the corresponding immersive experience.

But there may be another way to deal with the problem of *trompe l'oeil* while maintaining at least some part of the seeing-in doctrine.

Exactly what does it mean to consider the marked surface as the configurational fold? And what exactly goes into that fold? Some authors have pointed out to the fact that there may be two different kinds of twofoldness amalgamated in Wollheim's theory: a perceptual and an aesthetic kind.²⁵ Perceptual twofoldness

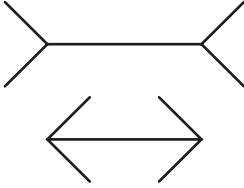


Figure 4
Müller-Lyer arrows

is present in the usual way by which Wollheim describes the twofoldness of seeing-in, such as this:

Looking at a suitably marked surface, we are visually aware at once of the marked surface and of something in front or behind something else.²⁴

Wollheim takes perceptual twofoldness as a necessary condition for experiencing pictures in general. Every mark in the surface of the picture enters the configurational fold and is therefore acknowledged by the spectator. However, it seems farfetched to sustain that whenever we look at pictures — such as pictures in newspapers or magazine photographs — we pay necessary attention to the whole surface (the kind of paper, the distribution of ink, the particular colours, etc.).²⁵ And even when we are looking at some paintings, it seems excessive to defend that all marks in the surface hold aesthetic importance and necessarily enter the spectator's experience. Take the case of this *Portrait of a Young Girl* (circa 1470) by Petrus Christus [Figure 5].²⁶

Over the ages the oil on the oak wood cracked and all these cracks became an inevitable trait of the marked surface. However, unless some creative art historian convinces us that the ageing of the wooden panel was somehow anticipated in Christus' creative intentions, it does not seem right to acknowledge that the cracks take part in the spectator's pictorial experience. They are cancelled by the second kind of twofoldness, the aesthetic twofoldness:

[I]n Titian, in Vermeer, in Manet we are led to marvel endlessly at the way in which line or brushstroke or expanse of colour is exploited to render effects or establish analogies that can only be identified representationally, and the argument is that this virtue could not have received recognition if, in looking at pictures, we had to alternate visual attention between the material features and the object of the representation.²⁷

Since only perceptual twofoldness seems to imply a necessary attention to the marked surface *in totum* and only some “marks” are aesthetically relevant, then perceptual twofoldness is not engaged in the pictorial experience and the recognitional fold is redescribed as “aesthetically meaningful marks in a surface”.

But if this is true then we can have aesthetic twofoldness, in which the viewer is somehow able to sort out those marks that are aesthetically meaningful, without perceptual twofoldness. Now, this disconnection runs against Wollheim's project of drawing our attention to a fundamental perceptual dimension of the appreciation of art that had been constantly ignored by most historical, psychological and aesthetic studies of painting — and

Figure 5
Portrait of a Young Girl,
 Petrus Christus, ca. 1470



the fact that what we see in pictures is not dependent on our will or imagination is an essential element of that project. Also, perceptual twofoldness was a compelling way to explain both perceptual constancy and the different indexing of objects in the real world and in pictures. When I show someone a photograph of a group of schoolchildren and I point to myself on that photograph my finger is directed at the surface of the photograph, and not at something *beyond* the photograph. But above all, the fact that the spectator pre-selects the marks that are deemed to be aesthetically significant and then compose the configurational fold, would entail that there is another, perhaps even more primordial, experience prior to seeing-in. And this would be particularly damaging to Wollheim's view according to which seeing-in is the uncontrolled bedrock of every pictorial experience. Ultimately, assuming that such a *choice* occurs prior to seeing-in would eventually surrender painting back under the rule of theories against which the whole notion of seeing-in was proposed and developed, and according to which art was a culturally relativistic and conventional affair.

But maybe there is a way of considering aesthetic twofoldness without perceptual twofoldness and the idea that the configurational fold is somehow the product of the spectator's pre-focus without collapsing into a semiotic conception of art. One way to achieve this is to consider the issue of twofoldness in seeing-in under a functional definition of artistic form.²⁸ What exactly makes up the formal structure of an artwork, or more specifically what exactly fits into the configurational fold of pictorial seeing-in? Functional definition of form points out to the rather remarkable fact that spectators can quite easily discern what constitutes the formal structure of any artwork, i.e., its configuration. This is explained by the postulating that artistic form has an intrinsically semantic quality, i.e., that it is composed of all and only those formal elements and relations that contribute to the recognition of its pictorial purpose. To put it in another way, it is the work's meaning that acts as a filter that makes aesthetically salient some formal features of the work while suppressing others that the spectator will actively ignore (such as the cracks in Petrus Christus portrait). Aesthetic saliency identifies the work's characteristics that identify it as member of a genre, or period, or any other artistic category (like *trompe l'oeil*), and that identification conditions our understanding of its content.

Based on the knowledge that anticipates her contact with the artwork, the spectator will focus her attention precisely on those formal elements and relations that are instrumental in conveying the work's purpose. Knowledge that ranges from the compositional strategies of the author, stylistic conventions and artistic practices, to a proper understanding of the author's intentions, and particularly her categorial intentions, i.e., the specific way she intends her work to be perceived. The work's genre, its historical period as well as other artistic categories play a significant role in determining what formal features of the work should be made salient and what should be suppressed. If we know we are watching a horror movie and recognize that the character is disgusted at the sight of a zombie, when the point/object shot of the monster arrives, "we will attend to the open sores on the zombie's body and not to his designer jeans".²⁹ In the case of Petrus Christus' portrait, it is because we know that we are looking at a sixteenth century oil on wood painting and not a contemporary artwork that we will actively dismiss the cracks as elements of the configuration and attend rather to the expertise with which the author conceals the brushwork.

Accepting the functional role of artistic form may lead to some significant changes in the way we appreciate art. Take the case of Arthur Danto's *defense* of Van Meegeren's "forgeries" of Vermeer.³⁰ Van Meegeren's original intention was to play a ruse on Professor Abraham Bredius, the leading authority on Vermeer at that time, and his wrong assessment of Vermeer as having been influenced by Caravaggio. Having been asked to certify the fake *Christ at Emmaeus* (1937) as a Vermeer, this was Bredius' verdict:

I am inclined to say that this is Johannes Vermeer of Delft's masterpiece... It is so different from all his other paintings and yet every inch a Vermeer.

If we stop considering Van Meegeren canvas as a forgery and look at it instead as the core piece of the critical trap laid against Bredius, we change the artistic salience of its formal features by acknowledging the relevant associations between the painting's content and Bredius' wrong conjectures about Vermeer's life (that he had come acquainted with Caravaggio's work during an Italian trip, etc.).⁵¹ In a way the rather obvious perceptual differences between Van Meegeren's painting and Vermeer's work become irrelevant and the work strikes us as a sort of *Caravaggian* version of Vermeer, and an obviously false one — an obviousness Van Meegeren wanted us to recognize, and not ignore.

As Arthur Danto puts it, it is not so much a question of what we see in a painting but rather what is shown in what we see.⁵² And what is shown determines what we see. Recent discoveries in cognitive neuroscience provide tools to consider this pre-focusing of the configurational properties as a transcendental cognitive condition and the consequent "choice" of what fits into the configurational fold to be regarded as a psychological matter, thus preventing art to be regarded as a conventional and cultural product, as Wollheim would have it. Human beings are capable to run longer distances than virtually any other animal. This is to large extent the result, in part, of the evolution of the human brain and its ability to dissipate energy due to its relatively numerous circumvolutions. This allows the human brain to keep its temperature within an operative threshold even under strenuous circumstances such as a long run under a scorching sun. But another important factor for preventing the brain from overheating consists in the way information processing has also been made quite efficient, and namely by conceptually blending different phenomena under a restricted number of categories and by privileging visual information that is easier to process. That is the cognitive reason why we privilege symmetry, centered objects, and balanced proportions. That is also the reason why human being have developed *biased competition models of selective attention* as cognitive tools by which distractions are ignored and attention is focused.⁵³ Our perceptive systems make salient certain environmental characteristics such as contrast, sudden movements, etc. A number of categorial expectations are generated about the identity, the structure, the dynamics and the emotional relevance of the objects and events we hope to find and these expectations shape what we perceive and how we perceive. Significantly, meaningful environmental characteristics are seldom the more salient from a purely perceptual point of view. This means that not everything we see will sustain our attention and many visible

elements will be actively ignored under a biased model — like the cracks in Christus' portrait. Our cognitive systems will guide our perception in real time and in a flexible way by making salient some perceptual characteristics, according to an interpretation of the context. Expectable characteristics are processed while distractive, redundant or eccentric elements are inhibited.

If this is so, then the configurational fold in Wollheim's twofoldness is not to be understood as a pre-established structural form neutrally offered for the observer to recognize an object. The visual elements and their relations that compose the configuration will vary in saliency according to content, artistic genre or historic period. They should be flexible enough for incorporating 2D-3D transition to the extent that optical illusion will have the same status as perspective as components of the configurational fold.

Lastly, *trompe l'oeil per se* is seldom the painter's intention and its function should be connected to the artist's authorial intentions. That seems to be the case with anamorphosis, such as Andrea Pozzo's monumental frescoes. Visiting the Church of Saint Ignatius in Rome, the observer starts by observing the distorted shapes in the false vault above. Once she arrives at the yellow marble spot that marks the ideal vantage point the anamorphic illusion dawns on her and the ceiling rises up in an apotheosis of augmented reality. The distortion and fuzziness observed earlier are now part of the configurational fold in which she sees the *Glorification*. The message is clear: one should also look for that particular vantage point from which everything comes into perspective, visually and existentially. That is the *bias* that guides the viewer's attention and makes her pre-focus the configuration.

Notes

1. Cf. Richard Wollheim, *Painting as an art*, Princeton: Princeton University Press, 1987: 75.
2. Cf. Andrew Harrison, "The limits of twofoldness: A defence of the concept of pictorial thought", in *Richard Wollheim on the Art of Painting*, Cambridge: Cambridge University Press, 2001: 41.
3. Wollheim, 1987: 62.
4. Wollheim, 1987: 62.
5. Wollheim, 1987: 62.
6. Wollheim, 1987: 62.
7. This shuttle between illusion and marked surface corresponds to Ernst Gombrich's description of pictorial experience. Wollheim's denial of *trompe l'oeil* as proper representation should also be understood in the context of his criticism of Gombrich's views.
8. The example comes from Michael Baxandall's *Painting and Experience in Fifteenth-Century Italy* and is quoted in Wollheim, 1987: 90.
9. Richard Wollheim, *Art and its objects*, Cambridge: Cambridge University Press, 1980: 209.
10. Wollheim, 1987: 46.
11. Michael Polanyi, "What is a painting?", in *British Journal of Aesthetics*, 10, 1970, 225–236; Maurice Henri Pirenne, *Optics, Painting, and Photography*, Cambridge: Cambridge University Press, 1970.
12. Wollheim, 1980: 216.
13. Wollheim, 1980: 14.
14. Wollheim, 1980: 14.
15. Ernst Gombrich, *Art and Illusion, A study in the psychology of pictorial representation*, Princeton: Princeton University Press, 1960: 275. One should recall here that *Art and Illusion* presented the still lives of Henri Fantin-Latour as the epitome of pictorial partial illusion.
16. Wollheim, 1980: 211–212.
17. Wollheim, 1980: 212.
18. Erwin Panofsky (1939), *Estudos de Iconografia — Temas humanísticos na arte do Renascimento*, translated by Olinda Sousa, Lisboa: Estampa, 1982: 23–24.
19. Cf. Wollheim, 1987: 91.
20. Cf. Susan Feagin, "Presentation or representation", in *Richard Wollheim on the Art of Painting*, Cambridge: Cambridge University Press, 2001: 193.
21. As proposed by Alberto Voltolini, *A syncretistic theory of depiction*, Nova Iorque: Palgrave Macmillan, 2015: 77–80.
22. Voltolini, 2015: 78. Voltolini transforms Gombrich's notion of pictorial experience as the partial illusion of seeing the configuration as the object into the recognitional fold of *trompe l'oeil* illusions.
23. Cf. Jerrold Levinson (1998), "Wollheim on pictorial representation", in *Richard Wollheim on the Art of Painting*, Cambridge: Cambridge University Press, 2001, 28–38; Bence Nanay, "Is twofoldness necessary for representational seeing?", in *British Journal of Aesthetics*, 45–3, 2005, 248–249; Dominic Lopes, *Understanding Pictures*, Oxford: Oxford University Press, 1996.
24. Richard Wollheim (1998), "On pictorial representation", in *Richard Wollheim on the Art of Painting*, Cambridge: Cambridge University Press, 2001: 19.
25. Jerrold Levinson goes even farther and denies that twofoldness is actually present in our experiencing of pictures in general: "If you see a woman in a picture in virtue of visually processing a pattern of marks, then of course in some sense you are thereby perceiving the medium in which those marks inhere or consist. But it is far from clear that when you see the woman in the picture you must in some measure be attending to, taking notice of, or consciously focusing on the picture's surface or patterning as such." (Levinson, 1998: 31)
26. The example is discussed in Nanay, 2005: 251.
27. Wollheim, 1980: 216.
28. Cf. Noël Carroll, *The Philosophy of Art*, London: Routledge, 1999, 137–148; W.P. Seeley, "Art, meaning, and perception: A question of methods for a cognitive neuroscience of art", in *British Journal of Aesthetics*, Vol.53, number 4, 2013, 443–460.
29. Noël Carroll, "Toward a theory of point-of-view editing", in *Theorizing the moving image*, Cambridge: Cambridge University Press, 1996, 132.
30. Arthur Danto "Art and Meaning", in *Theories of art today*, Madison: University of Wisconsin Press, 2000, 130–140; cf. Seeley, 2013: 452.
31. Danto, 2000: 134.
32. Arthur Danto, "Seeing and showing", in *Journal of Aesthetics and Art Criticism*, 59, 2001, 1–9.
33. An exploration of the ways in which these biased competition models can help in our understanding of aesthetic issues is proposed in Seeley, 2013.

Baroque Illusion and the mediation between built and represented space. From the corporeal to the gaze

ABSTRACT

Under the assumption that the illusion triggered by the Baroque *Quadratura* is not strictly solved or constricted within the limits of the pictorial surface, this article aims to explore the applied apparatus in the mediation between built and represented space. As such, and departing from specific case, the pursuit of illusion will be regarded as a global mechanism intertwining different strata, since the material conformation of space, in a direct relationship with the human body, up to the impression of materiality, a dimension exclusively inhabited by the gaze.

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Quadratura studies are strongly attached to the scope of representation, examining its iconographical contents, pictorial attributes, architectures and, more often, its perspective structure. A circumstance that, although debating the idea of an illusory space is strongly constrained to what takes place inside the picture frame. Such appreciation cannot be detached from the way we survey, analyse and communicate quadratura examples, often through its photographic capture, since a position coincident with its perspective's projective centre, restricting our sight and reasoning to such limits.

Despite the consideration of Quadratura as illusion, apprehended space is often examined since two autonomous entities: one before and another beyond the picture plane. A dichotomy underlined by coeval specialized treatises, according to their disciplinary nature: optics/mathematics or architecture/painting.

From the field of optics/mathematics, treatises, such as the ones from Abraham Bosse (1653) and Jean Dubreuil (1649), focus upon projective science, exploring optical and geometrical statements in order to substantiate and assist perspective procedures. Here, the tectonic circumstance is often emptied from its architectural qualifications being reduced to a geometrical surface. On the other hand, and from the architecture/painting domains, treatises as the ones from Andrea Pozzo (1693/1700) and Ferdinando Bibiena (1711), exhibit, in addition to a practical explanation of the perspective outline, strategies for composing the illusory space as well as its relation towards the tectonic support. In the aftermath, these treatises deal with compositional continuities, among both sides of the picture plane, tending to an idea of space as a global event that comprises, simultaneously, built and represented features.

However, where do the elements responsible for a spatial intertwinement are regarded?

Such cogitation over intermediation mechanisms and strategies, connecting built and represented elements, can be traced throughout the practice and codification of scenography in works such as the ones from Guidobaldo del Monte (1600) or Nicola Sabbatini (1638).

Departing from this assumption it must be highlight that the illusion triggered by the Baroque Quadratura is not solved exclusively within the limits of the pictorial surface. Hence the imperative of going beyond its projective qualities, a fundamental condition to provide an illusion of depth, the mechanisms of intertwining spatial strata, since the tectonic conformation of the architectural space until its deception played by Quadratura's representation, must be considered.

From this background, and acting under an eminently architectural point of view, illusion is here examined from a broad-spectrum intertwining construction, scenic apparatus, and perspective representation that combined trigger illusion and enhance the inhabited space as a total entity.

Invoking the presence of a body

Going further deep into the idea of illusion, the set of participating layers in the overall perceived space must be identified. A set comprising the material strata and the glimpse of its appearance, as well as its relations with the body and the gaze of the perceptive individual subordinated to illusion.

Once all the elements displayed in space participate in its global configuration, is illusion exclusively triggered by the eye?

Recalling Pallasmaa's phenomenological approach to architectural space (2007, 46), there is an immediate relation among proximity and distance correlating spatial elements with the body and the eye¹. Although the gaze relates us with elements at the distance, visual inducement relies on prior body experience. Distance and proximity, seeing and touching, are permanently intertwined in shaping illusion. A binomial essential to enhance illusion and settle a new reality.

Baroque illusion is grounded over the articulation of different elements whose nature request the simultaneous participation of all senses. Although we cannot deny the domain of vision, the perceived reconfiguration of space must be taken as a multisensory experience. Thus, the apprehension of the quadrature illusion and its merge with the built space, defining a new reality, cannot be restricted to what's beyond the picture frame (the place inhabited by the eye) but must also be assisted by what is displaced before such frame (the place inhabited by the body). The perceptive experience is triggered, simultaneously and interdependently, by the body and the gaze. Such idea is also mentioned by Pallasmaa (2007, 64), being responsible for the articulation of the overall apprehended space².

To claim the presence of the body in the illusory space (now considered as a global entity gathering both material and represented features as a new reality) implies experiencing, simultaneously, what is placed before the picture surface as well as what is induced to the eye by the perspective image. Hence the need to consider the materiality of the built space exploring links of visual likelihood to foster deception.

Departing from the experience of stone, touched by the body and the eye, its illusion is defined at the distance according to a proportional crescendo between close materiality and distant appearance. Such bodily experience accelerates the pictorial deception of stone [Figure 1], whether painted on stone (stone pretending to be stone)³, plaster, wood or even paper (material transfiguration).

We speak thus of scales of veracity (from materiality to its deception) that are established in space according to a refined sense of composition. Explored the sensual nature of facts,



Figure 1
Scales of veracity:
from marble to its faking
in different pictorial
supports.

illusion stands from a general state of ambiguity where the apparent plasticity apprehended by the eye and the tangible plastic quality of the built elements captured simultaneously by the body and the gaze, merges both sides of the picture plane.

Looking at an imaginary space

The quadratura of the Glorification of the Virgin (1754), painted by Luis Gonçalves de Sena, at Santarém's Jesuit College, demonstrates the painter's aptitudes in the domain of perspective and architectural image, denoting a spatial awareness and intentionality that, surpassing the condition of image, puts it at the level of architectural intervention. Operating within the (re)configuration of the perceived space, the work is part of the main chapel's global design that, in the overlapped of strata of constructive and decorative material, reveals a great coherence fostering the qualification of spatial illusion.

Verifying the structural and compositional qualities of the illusion proposed by Sena, two methods were applied: the perspective restitution, dismantling the quadratura through a reverse application of perspective procedures; and, the rehabilitation of the architectural design, grounded upon the same procedures applied by the *Scientia Aedificandi*.

The rehabilitation of the architectural design departed from the detected synchronisms with Pozzo's compositions, namely the 89th figure of *Perspectivae pictorum et architectorum* (1693), Volume I. Once Sena didn't draw the architectural project but directly its appearance through the combination of Pozzo's engravings [Figure 2], such striking coincidence is also identified with the 80th, 86th and 99th figures from which stands out the adopted formal vocabulary.

Concerning the perspective restitution, the analysis departed from the perspective outline, identifying successive perimeters of

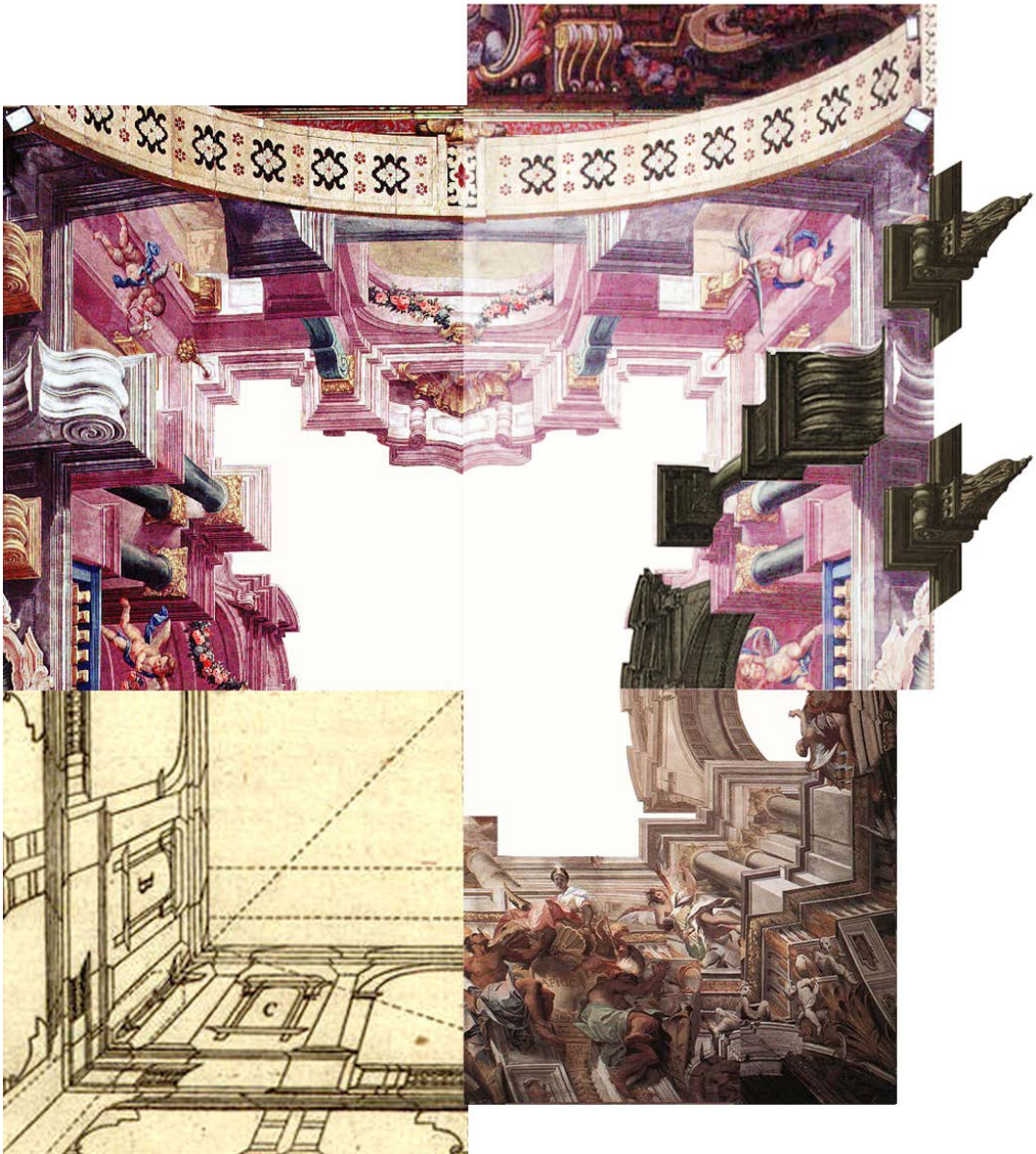


Figure 2
 Confrontation between the works of Andrea Pozzo (*Entrance of St. Ignatius in the Paradise*, 1691/94; *Perspectivae Pictorum et Architectorum*, 1693–80th, 86th and 99th figures) and Luís Gonçalves Sena (*Glorification of the Virgin*, 1754).

the outlined space and individualizing points of the architectural elements structure.

Both processes allowed to achieve the orthogonal projections of the imaginary space that combined with those of the built space evidenced compositional and proportional properties allowed to evaluate properties of the overall illusory space. Confronting both results, the obtained projections point out a composite correspondence even if evidencing slightly different metric and proportional criteria. Variations consequent to the painter's option on an empirical regulation of depths, attached to perceptual factors, to the detriment of a projective accuracy.

Synthesis and the acceleration of illusion

The previous methods exposed the structure of proposed imaginary architectures, but not the apparatus applied in modelling and qualifying the overall spatial illusion. In fact, and from the unavoidable example of Andrea Pozzo, in the transformation of the Roman church of Saint Ignacio's (1685–98), arises a clear relation between built and represented strata evidencing a coherent spatial conception.

The development of such a complex illusory program presupposes the application, into the quadratura outline, of the same instruments of the architectural design (since the survey of the supporting building, to the composition of the imaginary space). Besides that, also the continuity of compositional logics, between constructed and represented elements, attests the author's ability in manipulating and controlling the perceptive experience of the overall space. For instance, and concerning the idea of scales of veracity, the continuity of the marble structures, either in the built and the represented space, unify the overall apprehended space.

However, on the Portuguese panorama, rarely the quadratura illusion was coordinated with the built space, corresponding, more often, to autonomous campaigns. Exception, is the Joanina Library of the University of Coimbra (1717–28). A global commission that gather simultaneously all scopes of action enrolled in spatial qualification, from architectural design (João Carvalho Ferreira), to quadratura illusion (António Simões Ribeiro) and decorative layout (Manuel da Silva and Francesco Gualdini).

Being the built structure underlined by its marble materiality, the transition between stone and its appearance (namely in the ceiling's quadratura), is operated through wood carvings that, obeying to the volumetric veracity of the architectural ornament, are transmuted by marbled painting. A strategy that fakes the materiality of the carved elements (usually closer to the observer's body and eye), diluting the borders between three-dimensional and bi-dimensional elements and dismantling the idea of a proscenium arch.

It is under these same assumptions that the main chapel of Santarém's Jesuit church exhibits the full potential of the Baroque spirit according to an ordered apparatus which we cannot detached from identified centres of visual convergence and sound resonance [Figure 3]. A symbiosis of the seen and heard message, intrinsic linked to the formal resolution of space and the proselytizing temple mission.

Figure 3

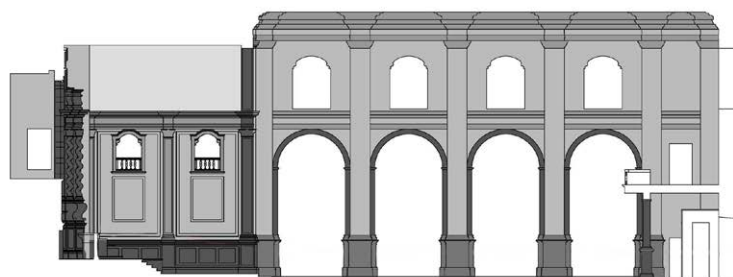
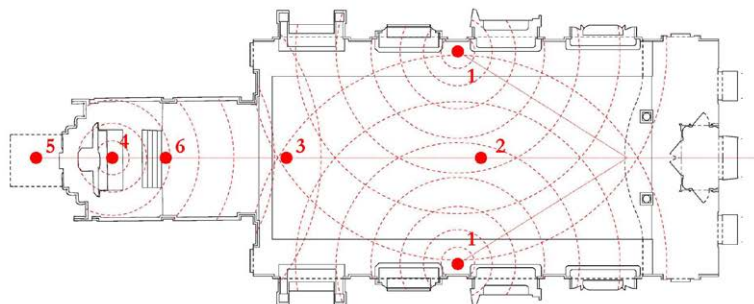
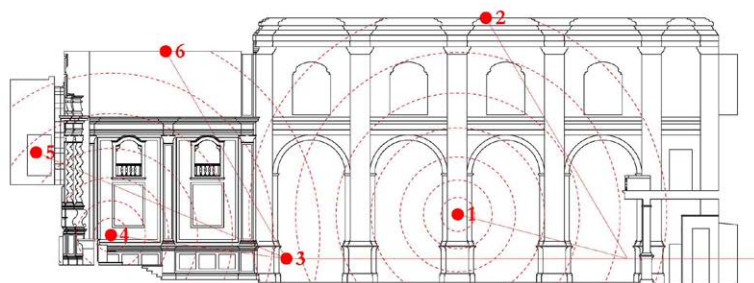
Interpretative scheme of focal and resonance centres in the church of the Colégio de Nossa Senhora da Conceição (1672–1754, Santarém):



- 1 Pulpit;
- 2 Painting of the Glory of the Holy Virgin;
- 3 Triumphal arch;
- 4 Altar;
- 5 Throne;
- 6 Painting of the Glorification of the Virgin.

Interpretative scheme of the scales of veracity in the church space:

- a Stone;
- b Stone with polychrome painting feigning stone;
- c Polychrome wood with marble appearance;
- d painting of fake marbles in stucco;
- e Quadratura painting.



See, hear and touch

Within these aspects, and following the Sermon of the Sixtieth, from Father António Vieira, eyes and ears are engaged in the perception of the overall space and message. As such the sequential eyes' elevation progressively guides the gaze to the altar and then, towards a vertical axis, until the vision of an apparent opened sky. In the same way the nave is dominated by the resonance of spoken word from both pulpits and the altar fostering the overall iconographic program.

In heaven the knowledge of God enters the soul through the **eyes**: Videbimus eum sicut est; on earth the knowledge of God enters through his **ears**: Fides ex auditu; and what enters through the ears is believed, what enters through the eyes needs. The listeners in us saw what they hear from us, and the shock and effects of the sermon would be very different⁴.

A physical and symbolic demonstration, deeply engaged with the triumphalist desire of the coeval political and theological discourse, is enhanced by the integration of scenographic procedures in the configuration of the inhabited space. In this line, and in a strict relation with the positioning of the observer, the elements with which a direct bodily relation is established are made of stone while others, just reachable by the eye, simulate its three-dimensionality and materiality, mediating the structural configuration of the chapel with the quadratura's two-dimensional circumstance imposing an overall sensitive space.

In the analysed example, the main-chapel's triumphal arch, wainscotings and altarpiece define the tangible space using two types of stone: Stone with inlaid marbles and Stone painted with fake inlays. In addition to these, the chapel inner walls are organized by pilasters, capitals and cornices of polychrome carved wood (obeying to the same formal patterns and colour palette of the inlaid marbles). Finally, the wall vacant surface is transfigured under the appearance of painted marble. All elements combined, fosters to merge the construction with quadratura image (namely through the abundant polychrome of true and fake marbles), coordinating the facts that fall within the field of vision. As such, the central vision, is dominated by the quadratura painting, while peripheral vision is framed by the built space.

It is from this scale of tectonic and imagery veracity (materiality and its deception), deeply related with the distance to the body and the reach of the eye, that layers of the built and represented space can be individualized. A space whose architectural structure, ornamental, decorative and quadratura elements provides a *continuum* in a concerted action of constant intermediation among combined features.



Figure 4

Deconstruction of the spatial box, with all the elements that contribute to the perception of the overall illusion and spatial cohesion

Strategies for a globalized space

In short, and although the discourses and analysis around the great baroque illusion fall into its iconographical meaning, pictorial quality, configuration of an imaginary space and projective dimension, the importance of different scales of deception must be underlined. At the end, this enrolled scales and strata not only foster the illusion raised by perspective, but also provide to the gaze a coherent experience of the overall inhabited space.

As such, and departing from the built environment, which stands before the picture plane, and involves the observer's body, the strength of an actual transformation of space depends much from the above standing *quadratura*. An artefact that from its bi-dimensional circumstance proposes to the eye an experience of space beyond the tectonic surface. However, the achievement of illusion is due not only to linear perspective, but also to the pictorial resolution of a convincing light incidence, *chiaroscuro* modelling and the use of colour that in synchrony with the chapel's light and polychrome of marbles and stucco, strengthens the overall apparent plasticity of space [Figure 4].

Nevertheless, we must keep in mind that this quality is not limited to the perspective or pictorial resolution that overcomes the strict obedience of projective rules and architectural composition, but also from the capacity to set up a credible sensitive global space deeply grounded in an effective relation among displayed bi-dimensional and three-dimensional facts.

Notes

1. "The eye is the organ of distance and separation, whereas touch is the sense of the nearness, intimacy and affection. The eye surveys, controls and investigates, whereas touch approaches and caresses." Pallasmaa 2007, 46.

2. "We behold, touch listen and measure the world with our entire bodily existence, and the experiential world becomes organized and articulated around the center of the body." Pallasmaa 2007, 64.

3. According to the baroque practice there is a distinction between building stone and ornamental stone (according to material hierarchy), being the first one undercover by the appearance of a more noble material usually through painting feigning it.

4. *Vieira* 1655

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The inconsistent images of Piranesi's *Carceri*: filling the gap between 2D and 3D representation

ABSTRACT

Many artists over the centuries have used inconsistent images, and G.B. Piranesi is one of them. The research proposes a method to investigate the ambiguous spaces of the *Carceri*, based on the integration of architectural, perspective, and perceptual interpretations, which allows the three-dimensional reconstruction of these spaces. Piranesi's mastery in the art of perspective allowed him to insert impossible figures and hide them simultaneously, alternate rationality and incoherence in a balanced way, and leave the observer the task of putting together the fragments of an insoluble puzzle.

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Introduction

Inconsistent images, also known as impossible figures, are ambiguous representations that can be imagined and drawn but cannot have a concrete, tangible form. Impossible figures relate to space in a *dialetheical* manner (Priest and Berto 2018) since they can be simultaneously true and false, depending on whether they are considered in 2D or 3D, respectively. They exist because visual signals and spatial clues provide contradictory information. Bruno Ernst proposes a classification that divides them according to the three main signals most commonly used: the covering and joining of planes, their continuity, and their orientation (Ernst 1986: 36–38).

Many artists have made more or less overt use of inconsistent images over the centuries, and Giovanni Battista Piranesi is one of them. In his *Carceri*, both in the first edition (1749/50) and in its reworking (1761), the Venetian engraver plays with space and perspective, contextualising a series of impossible figures¹.

Due to the perspective and spatial peculiarities of Piranesi's representations, perspective restitution is not feasible to achieve the goal of 3D space modelling.

The present research intends to propose an investigation method of the ambiguous spaces of the *Carceri*, based on the integration of architectural, perspective, and perceptual interpretations, which allows the three-dimensional reconstruction of these scenes.

Plate VIII, which did not undergo any architectural changes between the first and second editions, is examined among the various plates with spatial ambiguities. The group of two pillars (one of which with the portal) seems to have the side faces on the same plane if observed in the upper part. If observed in the lower portion (including the staircase), the pillars appear to be at different depths: the one on the right with the portal seems to be further forward than the other. The impossible figure “hidden” in plate VIII shows a plane that appears to be simultaneously placed at two different distances without having geometric discontinuities. This effect is obtained through the interposition of an element with determined volume and depth (in this case, the staircase), which cancels the flatness of the previously flat face [Figure 1].

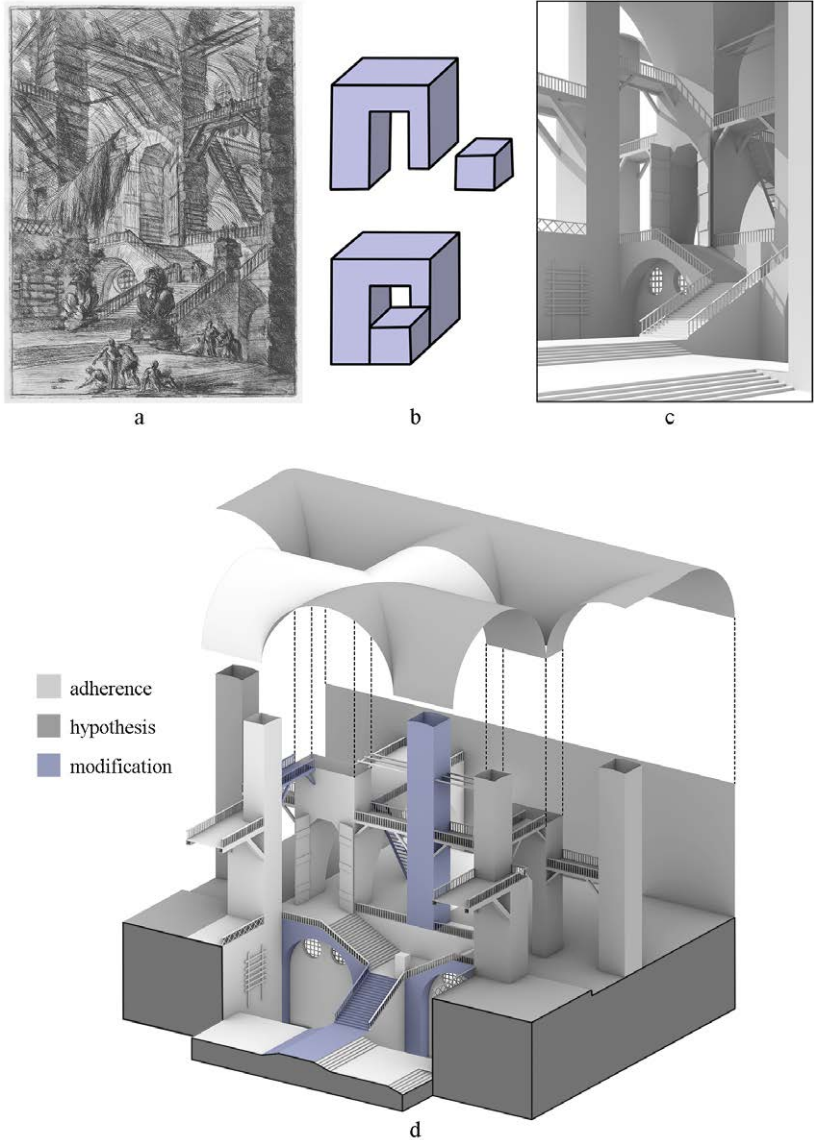
Methodological aspects and their application

The proposed method exploits the integration of knowledge from different areas of study (architecture, perspective, and perception), which, thanks to their interrelation, allows the reconstruction of the

Figure 1

From the etching to the 3D reconstruction:

- a Plate VIII of Piranesi's *Carceri*;
- b Schematisation of the inconsistent image introduced by the engraver;
- c Rendered view of the 3D model from the projection centre;
- d Axonometry of the reconstructive 3D model, highlighting the parts that show adherence to Piranesi's drawing, the hypothesised parts, and the modified ones.



space represented in the plate VIII of the *Carceri*. The aim is to fill the gap between the 2D and 3D representation of inconsistent images.

Architectural interpretation. Perspective images can only evoke configurations known to the observer, so knowledge of architecture is essential when choosing functional elements to base the restitution (e.g. triorthogonal elements) (Baglioni *et al.* 2016: 1029–1030).

Inspired by the method of graphic analysis of architecture, consolidated in the Roman School since the 1950s (Fasolo n.d.), the architectural values traced in the perspective image are selected. The drawing of architecture is the medium through which the analyses are conducted. In this case, the drawing

Figure 2
Architectural interpretation of plate VIII. Some examples of drawings for graphic analysis:

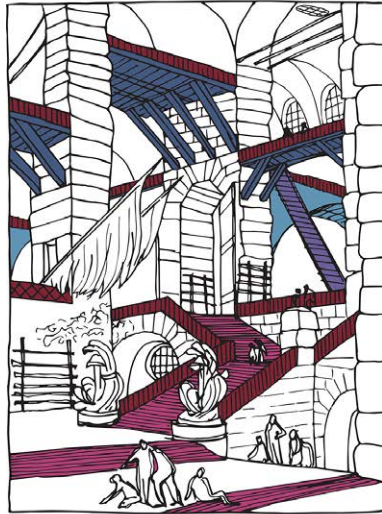
- a Mass analysis,
- b Symmetry analysis,
- c Connections for the systematic analysis of recurring elements,
- d Openings for the systematic analysis of recurring elements.



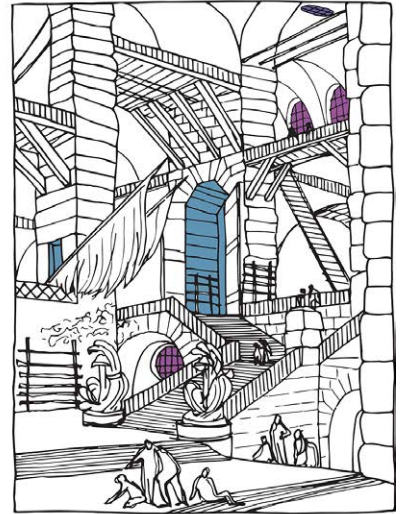
a



b



c



d

allows observations not on concrete architecture, as is the practice in typical graphic analysis, but on fantastic and immaterial architecture.

Following the principles of structuralism, which considers the work (literary texts, paintings, architectures) as an organic whole that can be broken down into elements and units, different levels of analysis are identified, whose functional value is determined by the set of relationships between each level and all the others. The decomposition of a complex space into more easily readable representations allows the modelling of the phenomenon.

The graphic analysis involves eight different types of investigation [Figure 2]:

- Re-drawing of the work
- Analysis of masses
- Analysis of the full/empty relationship
- Analysis of symmetries
- Analysis of proportional ratios
- Analysis of structures (arches/beams, floors, pillars, masonry, trusses, vaults)
- Analysis of materials (stone, rope, metal, brick, wood)
- Systematic analysis of recurring elements (connections, openings, architectural furniture, anthropic environment, prison furniture).

The critical synthesis of the various levels of investigation lets to recompose the unity of space through its three-dimensional interpretation, as will be seen later.

The architectural interpretation of plate VIII suggests which elements are to model, excluding all those not participating in the spatial configuration. It also suggests the composition triorthogonality, the recognition of architectural elements and symmetries. The last two help present a hypothesis of the development of space that is not directly visible in the etching.

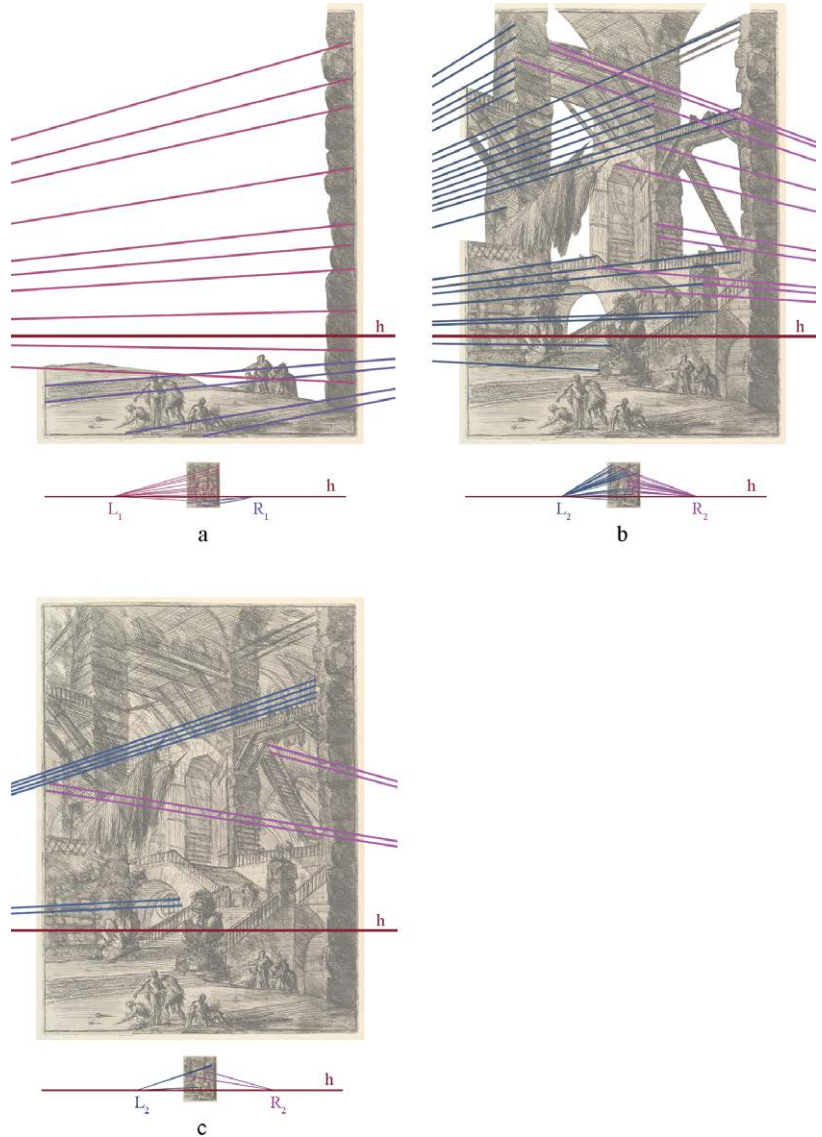
Perspective interpretation. After analysing and interpreting the space from an architectural point of view, we try to understand the spatial relationship of the represented objects, using, as far as possible, the tools of perspective restitution and the principles of stage design. The first one only allows to obtain general information on the perspective setting that the author chose for his work, which informs his communicative intentions. The idea of breaking down the plates into various planes at different depths, as if they were backdrops or stage flats, derives from stage design. In this way, it is possible to indicate the spatial relationship between the represented elements, at least in relative terms. This operation is carried out by searching for elements that define limits in the representation and identify space sectors at different distances from the observer. These segments of the representation can be characterised by different graphical and tonal treatments, through which the author creates the illusion of depth.

Therefore, perspective interpretation is based on the interrelationship between the decomposition of the image into depth planes and the perspective analysis of these individual planes, aiming to identify as much information as possible about the objects' point of view and spatial arrangement. In particular, what can be sought are the vanishing points of horizontal lines, through which the horizon line passes defining the height of the observer.

The plate VIII can be broken down into three depth planes [Figure 3]: the element framing the right margin in the foreground; the central architectural complex cannot be broken down into other planes as there are no visible continuity solutions between the elements; and the background.

Figure 3

Perspective interpretation of plate VIII. Analysis of the perspective setting of the three depth planes. For each depth plane (a, b, c), a construction detail (top) and the miniature of the complete construction (bottom) are shown. All lines running to the same vanishing point have the same colour.



According to the analysis of the perspective setting, these three depth planes share the same horizon h (that is not common in all the plates of the series). What varies are the vanishing points, both left (L_1, L_2) and right (R_1, R_2), of the elements in the first depth plane (L_1, R_1) compared to the other two (L_2, R_2). The non-coincidence of the vanishing points suggests a different orientation of the right margin wall in the foreground compared to the following architectural complex.

Perceptual interpretation. Assuming that the aim of the three-dimensional reconstruction of the perspective representations is to arrive at a space configuration closest to the one perceived by the observer, the third and final component of the proposed method is the perceptual interpretation of space.

The experimental method of perceptual interpretation proposed by this study is based on the processes of image decoding, which occur in the human visual system continuously and unconsciously, recorded through eye movements with the eye-tracking technique. Since the human maximum visual acuity is in the central region of the retina (*fovea centralis*), eye movements allow us to select what we are looking at clearly, and their recording is significant for perceptual purposes. An important study conducted at the end of the 1960s shows that the elements of largest fixation are those that the observer considers most useful for perception and understanding of the scene (Yarbus 1967).

Since looking at an artwork is influenced by the cultural variability of the observers, the experiment was conducted upon a reasonable sample of individuals (29) from different age and cultural backgrounds. Each of them was asked to look freely at the plate for 20 seconds before a webcam monitor, and eye-tracking was recorded through a software-based system. The free view let us understand whether, without any instructions, the areas that include spatial ambiguities are considered more than the others, as one would expect according to literature, or whether Piranesi managed to include ambiguities and to “hide” them in the composition at the same time. This information is important for the three-dimensional reconstruction, as it directs the modelling to pay more attention to those areas where fixations are most frequently focused. The test results includes an eye-tracking map in which warm tones are associated with the most observed areas of the plate [Figure 4].

The perceptual interpretation of plate VIII shows a pattern concentrated on the portal and the monumental staircase in the centre. Since the eye-tracking map shows few fixations in the upper part of the two pillars, it seems reasonable to assume that most observers did not notice the impossible figure introduced by Piranesi.

A reconstructive model of the space was obtained by combining the results of the architectural, perspective and perceptual interpretations. This model shows the same perspective as the etching when observed from the same projection centre. Clearly, the model and the etching are not perfectly coincident.

The 3D model shows different colours according to the elements directly taken from the Piranesian engraving (light grey), the elements modified for reasons of architectural and structural coherence (violet), and the elements hypothesised because they are not visible in the boundaries of the plate (dark grey) [Figure 1].

In order to solve the inconsistent image three-dimensionally, it was decided to follow the non-planarity of the side faces of the pillars suggested by the areas most observed during the perception test. Consequently, the width of the walkway connecting the two pillars, which is smaller than the engraved one, is modified, so it takes the width of the left pillar.

Figure 4

Perceptual interpretation of plate VIII. Eye-tracking map showing the pattern recordings of 29 individuals who freely observed the plate for 20 seconds.



Other changes were necessary for architectural and compositional reasons: on the first flight of the staircase, whose left balustrade diverges to make it wider and more imposing in the etching, on the arch supporting the second flight, which is not centred in the etching, and on the pillar in the centre of the right span, which was not on axis with the staircase.

Conclusions

The present research allows us to draw up a valid method in all cases in which the three-dimensional modelling of non-rigorous perspectives is to be achieved. The proposed method entrusts architectural interpretation with the understanding of the

represented architecture, perspective interpretation with the investigation of the spatial relationships of the architectural elements, and perceptual interpretation with the identifying of spatial relationship in the most ambiguous cases. None of these three fields, on its own, provides sufficient information for reconstruction, but together they allow to synthesise knowledge that supports the three-dimensional modelling and reconstruction process, basing it on data that is as objective and shared as possible. The outcome of the modelling represents one of the infinite possible reconstructions of plate VIII. It is not *the* reconstruction but *a* reconstruction because many variables come into play, and the biunivocity between the representation and the represented space is lost.

The application of the method on the plates of Piranesi's *Carceri* allows tracing a reasoned path of space reconstruction, pointing out in the 3D model the areas of greater and lesser adherence to Piranesi's drawing.

The study highlights the extent to which the *Carceri* are visions, images. They are not the result of a project, of the rational space prefiguration. They still and forever belong to the embryonic phase of the idea, which, brought to maturity through a spatial project, becomes architecture.

Therefore, the work that this research undertakes belongs to that phase of the prefiguration process that transforms Piranesi's images into architecture based on the clues that the engraver left in his works.

Piranesi's mastery in the art of perspective allowed him to insert impossible figures and hide them in the composition at the same time, to alternate rationality and incoherence in a balanced way, so that the observer is left with the appearance of a logic regulating the total scheme: "*piecing together the fragments of an insoluble puzzle*" (Sekler 1962, 335).

Notes

1. Ulya Vogt-Göknil is the first to have analysed graphically what she considers “the most daring structures” of the *Carceri* (plates VII, XIV and XV) [Vogt-Göknil 1958].

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Methodologies of restitution



Pedro Barbosa
RGB5, 2021
Acrylic on canvas



Pedro Barbosa
RGB6, 2021
Acrylic on canvas



Pedro Barbosa
RGB7, 2021
Acrylic on canvas



Pedro Barbosa
RGB8, 2021
Acrylic on canvas

Virtual Experiences: The Room of Pompeo as a “Covered” Courtyard in the *Trompe l’oeil* of Angelo Michele Colonna and Agostino Mitelli at Spada Palace in Rome

ABSTRACT

The theme starts from a study on the figurative and architectural artifices of the 17th century, commissioned by Cardinal Bernardino Spada (1594-1661), in his residence in Rome. He modified the 16th century architectural structure by using the art of visual illusion and perspective paintings, defining in particular the space of the room of Pompeo.

We are presenting a topic that concerns two different types of navigations: observe the walls on site and immerse yourself in the space of the 3D model.

They are both virtual navigations but produced with different techniques that can be used in a complementary way.

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Introduction

We are presenting a topic that concerns two different types of navigations: observe the walls on site and immerse yourself in the space of the 3D model. We are demonstrating that those analogue paintings have the task of expanding the dimensions of the building's real space and multiply the views of those who walked across the room, both towards the city and the interior parts of the building. They are both virtual navigations but produced with different techniques and can be used in a complementary way. You can perceive a space, imagining it in a personal way, but you can also walk through it in the immersive model, thus revealing the analogue space of the hall in its virtual identity as a "covered" courtyard, amidst perspective illusions and perceptive deceptions [Figure 1].

Figure 1
2D/3D: real/unreal



Our aim is to explain and explore the role of the illusion in the palace and in the culture of Bernardino Spada's project. In order to do this, we set this research basically on three sections or themes: first of all, we had to study the historical process of the palace, understanding the role of Bernardino Spada, his intentions for a unitary project in which condense all the scientific discoveries and artistic experimentations of that time. We have to keep in mind the importance of the scientific revolution spreading all over Europe during the 17th century.

So, the following part of the research focus on the paintings of Pompeo's Room, their theme and the composition. Starting from the quadraturistic painting and using the process of perspective restitution, we gave back the perspective set, the point of view, the horizon and the observer height, and then we could draw the

plan of the illusionary space imagined by Bernardino Spada and painted on the wall.

The last part is also the experimental one. We propose some fruition models that lead to explore and to understand the illusionary space and the relationship between real and unreal: a. the spherical render; b. the 3D model; c. the immersive model. We highlight pros and cons of each type of model and their use to overcome the illusion.

The Room of Pompeo

The Room of Pompeo was painted by Agostino Mitelli and Angelo Michele Colonna in 1635 and after that, it was modified in 1660 during the occasion of the changing of its access in the architectural configuration.

The content of the figurative representation is the celebration of the temporal power of Pope Urbano VIII Barberini. Animals and characters, such as the man with the telescope and the parrot in the golden cage, are symbolically used and they give the temporal dimension to the pictorial system.

The illusory perspective space is the result of a strategy designed by the Cardinal, who wants to transform the room space into a “covered” courtyard through the different techniques of perspective representation and its constructs. The painted structures define multiple depth and spatial articulations that are triggered with the effective architectural system.

The authors, therefore, analysed the composition of the painted surfaces, the relationship between the frescoed parts and real architectural parts. Moreover, they grasped the compositional rhythms and the adopted languages, finding figurative references in previous works, such as Villa Malvasia by Antonio Curti, as well as in following ones as the frescoes at Palazzo Pitti in Florence (1637–1641), in which similar spatial configurations are found.

Furthermore, through geometric operations of perspective restitution, the true shape of the visual areas which is painted has been given back.

This procedure reveals the relationship between real and virtual space once these are related in plan and section with the building’s survey. Moreover, the project has been enriched by a 3D model of the represented spaces, allowing an in-depth study of these virtual spaces and their immersive navigation.

The analysis of the perspective paintings on the four walls of the hall revealed important features of the illusionary scenes. The so-called process of perspective restitution, allows to give back the planimetric features of the painted parts of the building, to read the connection elements between the real and the virtual space, to understand the articulation of the distribution system, and, of

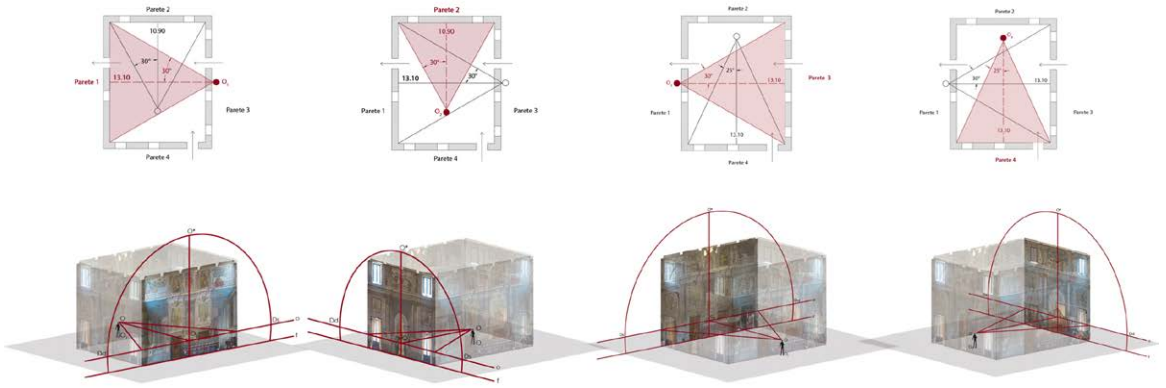


Figure 2
Perspective analysis
of point of view and
perspective set

course, the relationship between the hall and the perspective set.

The four walls perspective set have common features, such as the height of the observer, and, two by two, in relation with the actual sizes of the wall, some similar features of the observer's position.

What emerges from the perspective analysis is that the observer of the wall is set out of the hall, in the hallway, 13.10 m distant from the wall. We can find the same setting for the wall 3, the other with bigger sizes. The observer is put in the adjacent room 13.10 m far from the painted wall.

The position of the observer of wall 2 is, instead, located into the hall, 10.90 m from the wall itself, and similar to the wall 4 set, with a viewpoint in the hall but a little bit further, again with a 13.10 m distance.

The Relations between Real and Virtual Spaces

Once we deal with the 3D reconstruction of the virtual space, we try to answer two main questions concerning the quadratura by Colonna and Mitelli:

- a) How does it interact with the actual palace?
- b) How can we explore and share the virtual space?

To answer the first question, we executed a hybrid 3D model, composed by the point cloud of Palazzo Spada survey and the 3D reconstruction of the virtual space. We also chose to adopt the traditional methods of descriptive geometry, such as the perspective and axonometric sections, for this phase of analysis.

The virtual space invades part of the central courtyard and takes the places that are occupied by the real galleries along the other sides. At the same time, the architecture of the virtual courtyard, on



Figure 3
Sections and axonometries: relationship between real and unreal spaces

the right, fits the depth of the entire body of the palace towards the Vicolo of the Arcaccio.

In the sections we can also see other interesting connections between the real and virtual spaces: on the left, the illusory architecture fills the width of the corridor that comes from the main staircase of the palace, which also happens for the private chapel on the opposite side. Once again, the virtual courtyard fits the depth of the real garden [Figure 3].

To explore the virtual space and share this experience with other users we experiment three different representation techniques: online spherical rendering, online 3D models and interactive models.

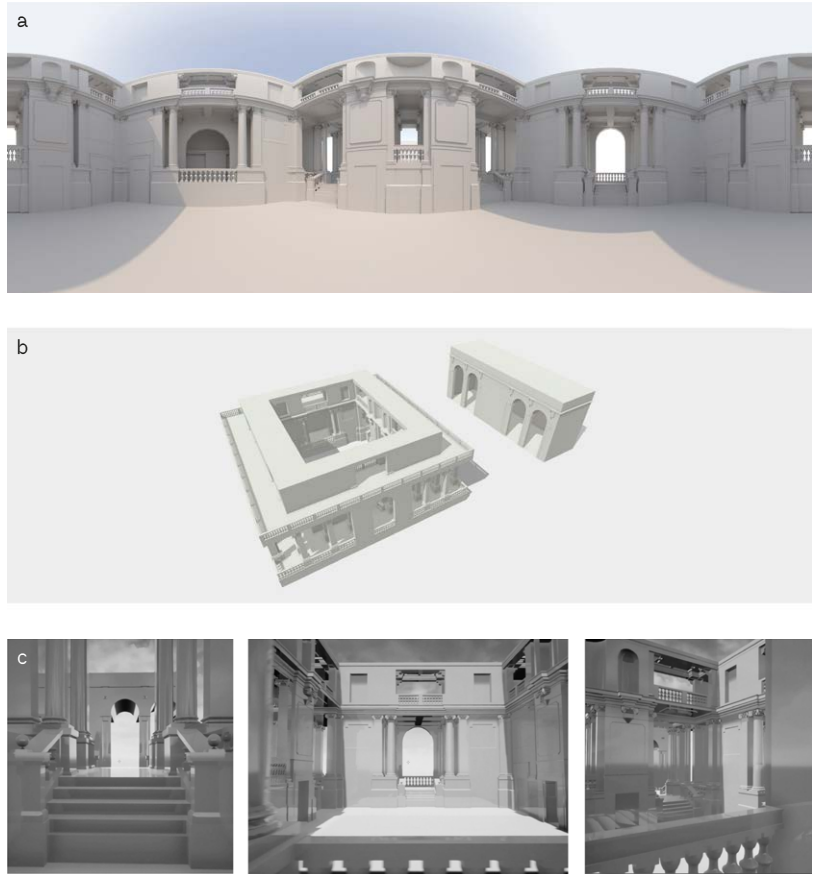
The spherical rendering, which is taken from the centre of the room, shows how the virtual space transforms the room of Pompeo into a courtyard. This technique has its pros and cons. The main pros are a high-quality shading and framing since it is generated by traditional rendering software, the existence of free easy sharing platform and that it can easily work on low-end hardware requirement for users. Its main con is the low interaction level for the users that can just turn around the position of the virtual camera.

The second technique we experiment is the sharing of the 3D model on an on-line platform. The main pros of this technique are a mid-quality real time shading, the availability of free easy sharing platform and a mid-interaction level that we can define as a third person navigation of the model. While its main cons are the mid

VIRTUAL EXPERIENCES

Figure 4

- a spheric panorama;
- b 3D model;
- c interactive model



to high-end hardware requirements for users and the absence of collision detection between the model and the virtual viewer.

The third experiment we develop is the construction of an interactive model. What we tried to do is basically the creation of a virtual space that a user can freely explore, choosing where to go and what to see in order to understand the architectural space of the perspective illusions painted on the walls of the hall.

So, as we already told, the 3D model, based on the two-dimensional drawings given back from the perspectives, allows to break the illusion and reveal the real configuration of the illusionary parts of the building. This model, made with NURBS surfaces and curves is the starting point, the starting element of this experimentation that is still in progress.

First, we needed to elaborate the mesh model using a rendering software to create an interactive model. The model has then been worked into a rendering engine: here it is possible to set a UV mapping, for texture mapping on the 3D model's surface, or it is possible to set lights and other rendering features. Thus, the first thing to do, for transforming this model into an interactive model, is to optimize the polygonal mesh for the surface collision and detection, that is the feature that actually allows to interact with this

model, to detect and avoid walls, to go upstairs, or walk on the floor. The way to do that is called voxel modelling. Voxels are essentially 3D pixels, but instead of being squares they are perfect cubes.

So, what we did was to transform the mesh model generating a voxel model. The model can be now imported in a game engine, such as Unreal Engine, choosing the first person's character pre-set that simulates the exploration of the virtual space from a human's point of view and that allows interaction with the model.

Setting the collision detection, the walls, the stairs, and other geometrical elements are ready to be detected. So, what is possible to do is to navigate the virtual scene going wherever the user wants, using a joystick or a Kinect or with the keyboard.

The final result let the user go upstairs and walk on the balcony floor, walking in any direction and choosing a viewpoint on the hall or on the virtual space to understand the architectural features of the painted spaces but also the relationship between these spaces and the Room of Pompeo, the real architecture.

We choose to set a first-person character navigation of the virtual space, and for virtual space we mean the painted spaces that we modelled, and it is possible to imagine that this navigation can be made using a VR visor, for example, in order to have an immersive navigation of this 3D model [Figure 4].

Conclusion

The illusionary space of Pompeo's hall invades the real spaces respecting the size, the dimensions and the architectural features, even if there is not an effective continuity between the two type of spaces.

Exploring the hall standing there physically the user is allowed to appreciate the material quality of the paintings, having a direct experience of the perspective illusion. The virtual explorations, instead, allow to have a clearer perception of the illusionary space and of the way in which it transforms the Pompeo's hall in a virtual courtyard, perfectly fitting with the whole system of the real courts and gardens of the palace.

A continuous and constant switch from 2D and 3D is what allowed us to understand the spatiality and the features of the illusionary space, and lead us to overcome the illusion, to reveal the delusion and to imagine a new way of have experience of what Bernardino Spada minded in 17th century, whit his brilliant and innovative ideas.

So, what is possible is also to understand the culture of the project, to deepen the techniques and the theories underlying the project process, and the final results that characterized (and still characterize) the architecture of Palazzo Spada.

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The Apocalypse of optics, the eyewitness of the Apocalypse: time, space and illusion at Trinità dei Monti

ABSTRACT

The anamorphic cycles and the catoptric sundials at the Convent of Trinità dei Monti were developed within an experimental process conducted by the Minims friars in the 17th century. The recent surveys on these works have revealed unprecedented connections between them, not only of perspectival nature, but also with a symbolic and mystical character. The visible (and invisible) apparatuses shows how they were part of a project in which the illusory images supported Order's spiritual life.

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Introduction

The term ἀναμόρφωσις (anamorphosis) is a word that derives from Greek. Its etymology in the suffix ἀνά (upwards, backwards, back to) and in the root μορφή (form)¹. According to Jurgis Baltrušaitis² the word firstly appeared in the treatise by Gaspar Schott (1608–1666), *Magia Universalis naturae et artis...* (Paris 1657–1659), as confirmed in the *Oxford Companion to Arts*. In the art field this term refers to a precise category of planar images or to tridimensional structures which are represented in a strongly deformed perspective. These images aren't immediately recognizable in their real configuration, but can only be fully understood if observed from a precise point of view usually located on a plane surface. In other cases, anamorphoses are recognizable due to their reflection on a convex, spherical, cylindrical, conical or pyramidal mirror, called anamorphoscope³. The most important authors or scientific disseminators of the anamorphosis phenomenon were opticians and students who studied perspective belonging to religious orders⁴, such as the Jesuits and the Minims. During the Baroque period monks used this representation technique to convey messages or hidden allegories using the archaic code of *perspectiva secreta*. It is in the Seventeenth century in fact that the study of anamorphic genre reached levels of theoretical depth and great graphic virtuosity which had only received a brief look in previous treatises or in artistic achievements. The most precise is *La Perspective Curieuse* (1638) by the Minim Friar Jean François Nicéron that was also published in Latin (1646), edited and integrated by Father Marin Mersenne with the new title of *Thaumaturgus opticus* after the Friar's death. This last work must be considered as a partial realization of the editorial project that Nicéron had been following for many years. Unfortunately, the commitments of the religious order and his early death prevented him from completing it. The story of direct and indirect anamorphosis develops exactly around the figure of Nicéron and his friend Emmanuel Maignan, both living and working in the Roman convent of Trinità dei Monti in the first half of the Seventeenth century⁵.

The Apocalypse of optics, the eyewitness of the Apocalypse

The portrait [Figure 1] depicts a young monk outlined by a gaunt face and a barely visible beard, wearing a tunic with the typical cap of the religious Order of Minims⁶. He is holding the *planche* of his latest treatise, on which he was still working just before his death on the 22nd of September, 1646. Since Nicéron had

Figure 1

M. Lasne, *R. P. Joannes Franciscus Nicéron ex Ordine Munimorum, egregiis animi dotibus et singulari matheseos peritia celebris, obiit Aquis Sextiis 22 septembris an. Dni 1646, Aetat 33*. Engraving. Paris, first half of the 17th century.



already passed away before his book was published, the engraving by Michel Lasne (1595–1667) actually appears as a space-time paradox. In fact, although he is represented holding the book, his work will only be published after his death, as mentioned before. On the *planche* that Nicéron is holding upright, we can read: “F. Iacon Franciscus Nicéron/Delinea Romæ ano Sal. 1642/Ætatis Suæ 29”. These words give a hint of the period when the first draft was drawn out. At the time, which coincided with the second stay of Nicéron in Rome (post January 1641–April 1642), he was writing the Latin edition⁷, with the relative plates of his *La Perspective Curieuse* (1638). This treatise unlocked the aberrant secrets of perspective known as *anamorphosis*. As the treatise was written in French it enabled other European students to read it. Nicéron was born in Paris on the 5th of July, 1613; he joined the Order of Minims at the convent of Nigeon-Chaillet (now Passy), where he served as a *novice*. On the 26th of January, 1632, after he had completed his *novice*, he was admitted to the *profession* and went to the convent of Place Royale (Paris). He was given a second

Figure 2

J.F. Nicéron, *Saint John the Evangelist writes the Apocalypse on the island of Pathmos*, 1639–40. Color mural painting. Conventual Complex of Trinità dei Monti, Rome. Detail.



name Jean after his uncle who was a Minim monk too. In 1631, at the age of 18, during his novitiate, Nicéron created his first artistic work, consisting in an anamorphic portrait of Jacques d'Auzolles de Lapeyere (1571–1642), a well-known author of *Mercurie charitable*⁸. The young Jean François showed a special inclination towards mathematical studies and a remarkable interest in optics, catoptric and dioptric without neglecting his previous studies in theological and philosophical disciplines (in his first treatise). During the following years the twenty-five year old Nicéron published *La Perspective Curieuse, ou magie artificielle des effets merveilleux...* in Paris for Pierre Billaine (1638). Nicéron, well aware of the level of sophistication that perspective technique had achieved between the Sixteenth and early Seventeenth century, approaches the problem of deformation that nowadays could be defined as 'projective' *avant la lettre*. He actually abandoned the practical expedients widely exploited until then, "...because it is a matter of small weight and for which it is not necessary to have any knowledge of perspective"⁹.



Figure 3
E. Maignan, *San Francesco di Paola gathered in prayer*, 1642. Mural painting. Conventual Complex of Trinità dei Monti, Rome. Glimpse of the anamorphosis.

From a critical point of view, the Nicéron's theoretical and practical work appears to be closely linked to the one by Father Emanuel Maignan (1601–1676). The relationship between these two men obliges us to investigate on the speculative and artistic activities of our *thaumaturgus opticus* on the Roman monastery site. Nowadays the extraordinary catoptric astrolabe¹⁰ (1637) can still be admired in the convent's corridor facing north. The corridor, when walking clockwise, is then followed by a second long corridor hosting the 'perspectival painting' (1639–1640) made by Father Jean-François Nicéron using tempera paint. Nicéron admits that this anamorphosis light-headed effect inspired the following anamorphic work by Father Maignan (1642) which is a grisaille painting depicting the founder of the Order, St. Francis from Paola¹¹. The mural paintings were probably depicted in a quiet atmosphere of collaboration between the two confrères in the Roman convent. At the age of twenty-nine Nicéron and Maignan's fellow Brother had also lived in the same College of Trinità dei Monti during Nicéron's first Italian stay¹² from the 25th of May (1639) to the 28th of March (1640).

It was precisely here that Nicéron carried out the large anamorphic coloured mural painting between 1639 and the early 1640s — which was then replicated although with significant differences in Paris (Minim's Motherhouse in Place Royale) in

Figure 4

E. Maignan, *Catoptric astrolabe*, 1637. Mural painting. Conventual Complex of Trinità dei Monti, Rome



1644. It depicted *St. John the Evangelist writing his Gospel in the island of Patmos*¹⁵ [Figure 2]. Father Maignan also created the anamorphic grisaille portrait representing the founder of the Order in this very same place in 1642: *St. Francis of Paola in prayer* (Ceñal 1952; Baltrušaitis 1984; De Rosa 2013) [Figure 3]. Although the work of art was restored (February 2009), a few parts of Nicéron's painting are missing, even if the result remains totally understandable. At first, the mural painting was considered a fresco-secco. This information is significant, because the analysis on Nicéron's *curriculum vitae et studiorum* has not yet revealed any particular reference of an advanced artistic apprenticeship. Since the anamorphosis of *St. Francis of Paola* and the catoptric sundial [Figure 4] — both painted by Maignan — were created with the same technique, we deduce that this method was chosen by the two scholars because it required an inferior degree of expertise.

Although we have no reference about *St. Francis of Paola*, the transaction of *St. John* to an oblique image — from a projective and not mechanical point of view — was already present in *Proposition II*, in particular in the three following corollaries and the plates 12 and 13 of *La Perspective Curieuse's* Book II. As recalled by Nicéron in his *Thaumaturgus Opticus*, on the mural painting, a long ancient Greek inscription arises on the book spine and reads as follows: “The Apocalypse of Optics, the Eyewitness of

the Apocalypse”¹⁴. The reference is clearly about the power of epiphany (*apokalypsis* means revelation) implying on one hand the anamorphic magic of the work itself- which discloses its contents only when observed from a specific point of view (geometrically and spatially fixed) and on the other the theological role played by St. John¹⁵. Instead the perspectival culture influenced the presence of the Latin inscription “CITRA DOLUM FALLIMUR” (“we are deceived without malice”) that adorns the pendant cartouche from one of the branches placed over St. John’s back. Fratini and Moriconi suggest¹⁶ it is a quote by the *motto* which accompanied the title of the famous *Perspectivae Libri Sex* (Pesaro 1600) by Guidobaldo del Monte (1545–1607). Indeed, the presence of this and other pictorial and decorative works, which adorned both Roman and Parisian Minim’s monasteries, on one hand constituted a real breeding ground in which to test experiments in optical and figurative painting theoretically elaborate and therefore performed *in vitro* in treatises and studies. On the other hand these were the subject of a powerful reflection on the Cartesian labyrinth, on what is visible and on the *falsa credita* which derived from it.

Conclusion

In his latin treatise Nicéron theorized how anamorphosis could be applied to extensive wall surfaces, allowing the creation of real proper mural paintings, like those he had already carried out in Rome and Paris. In addition to the anamorphic representations, depicting *St. John the Evangelist* in the two famous Minims Convents, the author painted another accelerated perspective painting (probably accomplished in the fresco-secco technique) in the Paris Cenoby — ‘en perspective’ according to the Convent’s annals — which had as a subject *The Magdalene contemplating in the Sainte-Baume cave* (1645), which was finished after Nicéron’s sudden death, by Father Maignan during his visit to Place Royale in 1662. We know that Nicéron adopted a similar approach to Maignan’s one while creating the extensive Parisian paintings. The work was imagined as an open window, a reality offered to the painter’s eyes where the anamorphic frame is already fitted with a perspective image drawn in true shape inside a square network projected on the wall surface. Therefore it does not exist anymore “... the intersection of the visual pyramid that separates the subject from the object, or the simple projection of the object on the plane of intersection. Now, on the plane there are depicted images projected by the mind”¹⁷.

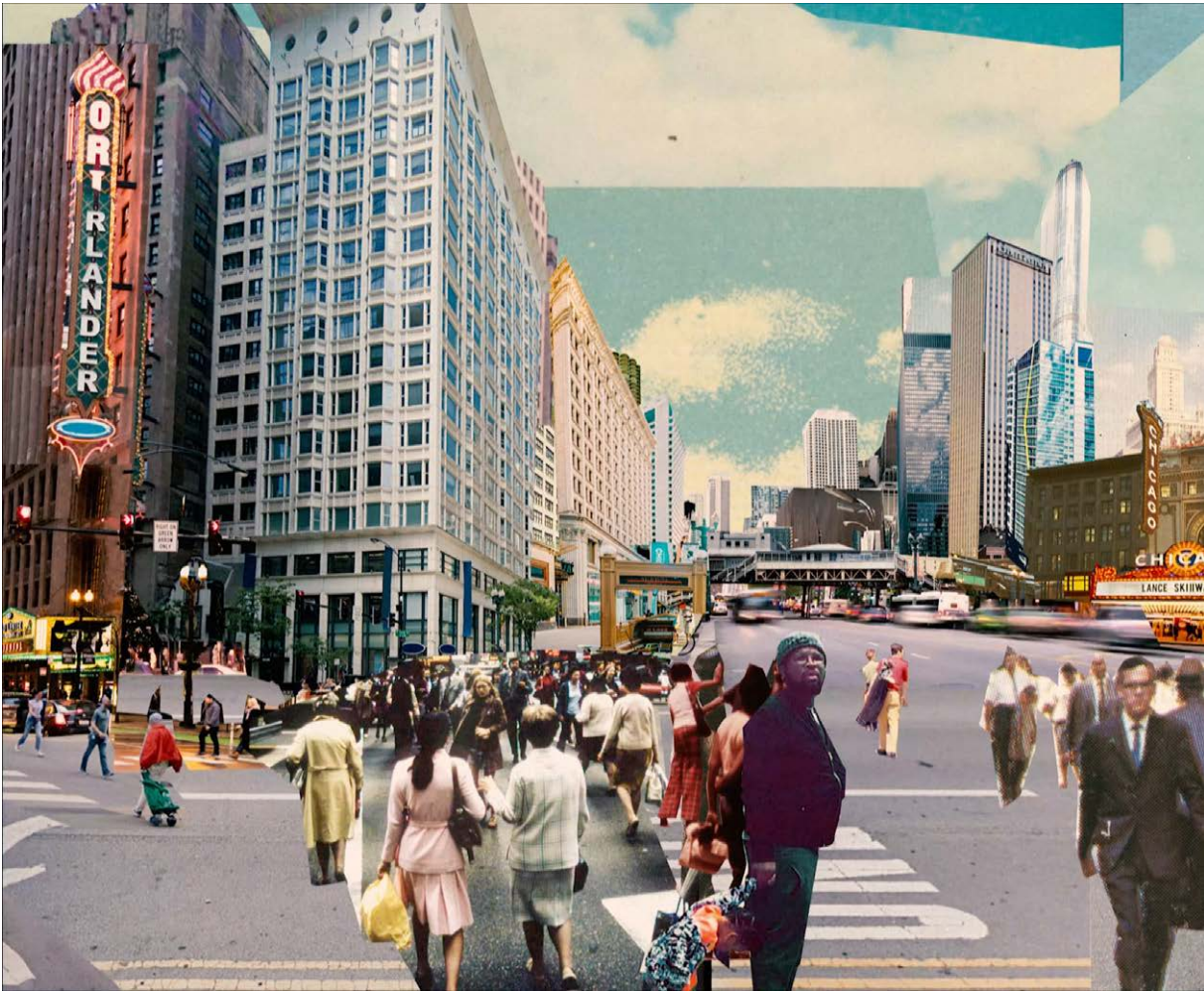
Notes

1. Cfr. A. De Rosa, G. d'Acunto, *La vertigine dello sguardo. Saggi sulla rappresentazione anamorfica*, Cafoscarina, Venice 2002.
2. Cfr. J. Baltrušaitis, *Anamorfoosi o Thaumaturgus Opticus* (italian version), Adelphi, Milan 1984.
3. Cfr. P. W. Kuchel, *Anamorphoscopes: a visual aid for circle inversion*, in "The Mathematical Gazette", vol. 63, n° 424, Mathematical Association, Leicester 1979.
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9. J. F. Nicéron, *La perspective curieuse*, cit., p. 90.
10. Cfr. A. De Rosa, edited by, *Jean François Nicéron. Perspective, Catoptric and Artificial Magic*, Aracne edizioni, Rome 2013.
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12. AGM, *Livre des Conclusions Capitulaires de ce convent de la S.te Trinité Du mont* (5-X-1620 -26-IX- 1649), (T3), xvii sec. It is also confirmed in: R. P. C. Martin, *Histoire du couvent royal des Minimes français de la très sainte Trinité sur le mont Pincius à Rome. Manuscript of the convent of Trinità dei Monti* (Ms. Trin.), late XVIII century, p. 325.
13. Cfr. A. De Rosa, edited by, *Jean François Nicéron. Perspective, Catoptric and Artificial Magic*, cit.; but also: R. Ceñal, Emmanuel Maignan su vida, su obra, su influencia, in "Revista de Estudios Políticos", XLVI, 1952, pp. 111-149; J. Baltrušaitis, *Anamorfoosi o Thaumaturgus Opticus* (italian version), cit.
14. J.F. Nicéron, *Thaumaturgus Opticus*, cit., p. 177.
15. Cfr. D. Bessot, *Synthèse et développement de techniques d'anamorphoses au XVII^e siècle: les traités du père Jean-François Nicéron*, in "Mélanges de l'école française de Rome. 117-1. 'École française de Rome'", Rome 2005, pp. 91-129; G. Fratini, F. Moriconi, *Datazione e attribuzione dell'anamorfoosi di San Giovanni a Pathmos presso il Convento della Trinità dei Monti a Roma*, in "MEFRIM: Mélanges de l'École française de Rome. Italie et méditerranée », T. 122/1: École française de Rome, Rome 2010, pp. 128-129; A. De Rosa, edited by, *Jean François Nicéron. Perspective, Catoptric and Artificial Magic*, cit.
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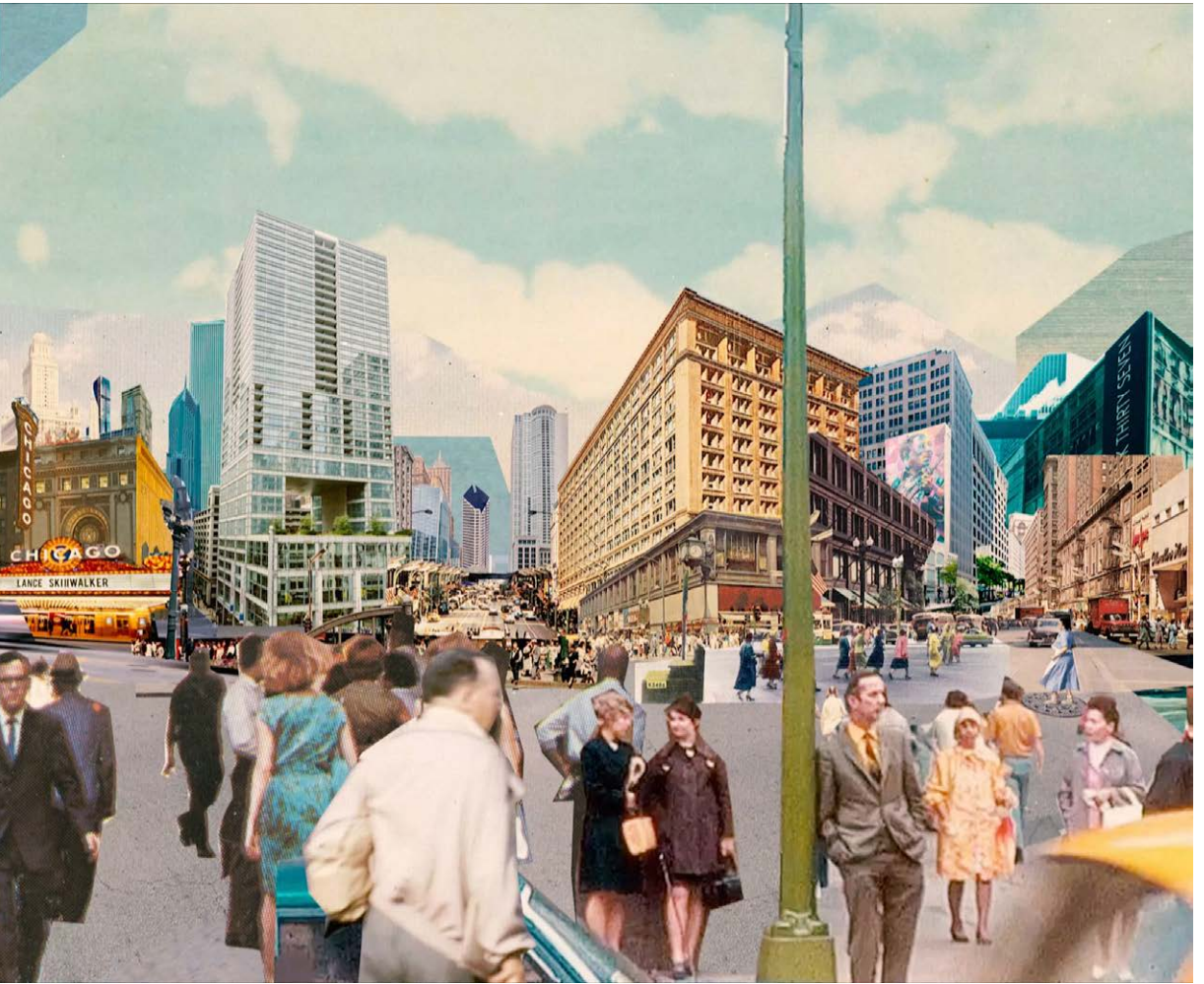
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New visualities



João Pombeiro
Chicago, 2022
Collage / digital animation



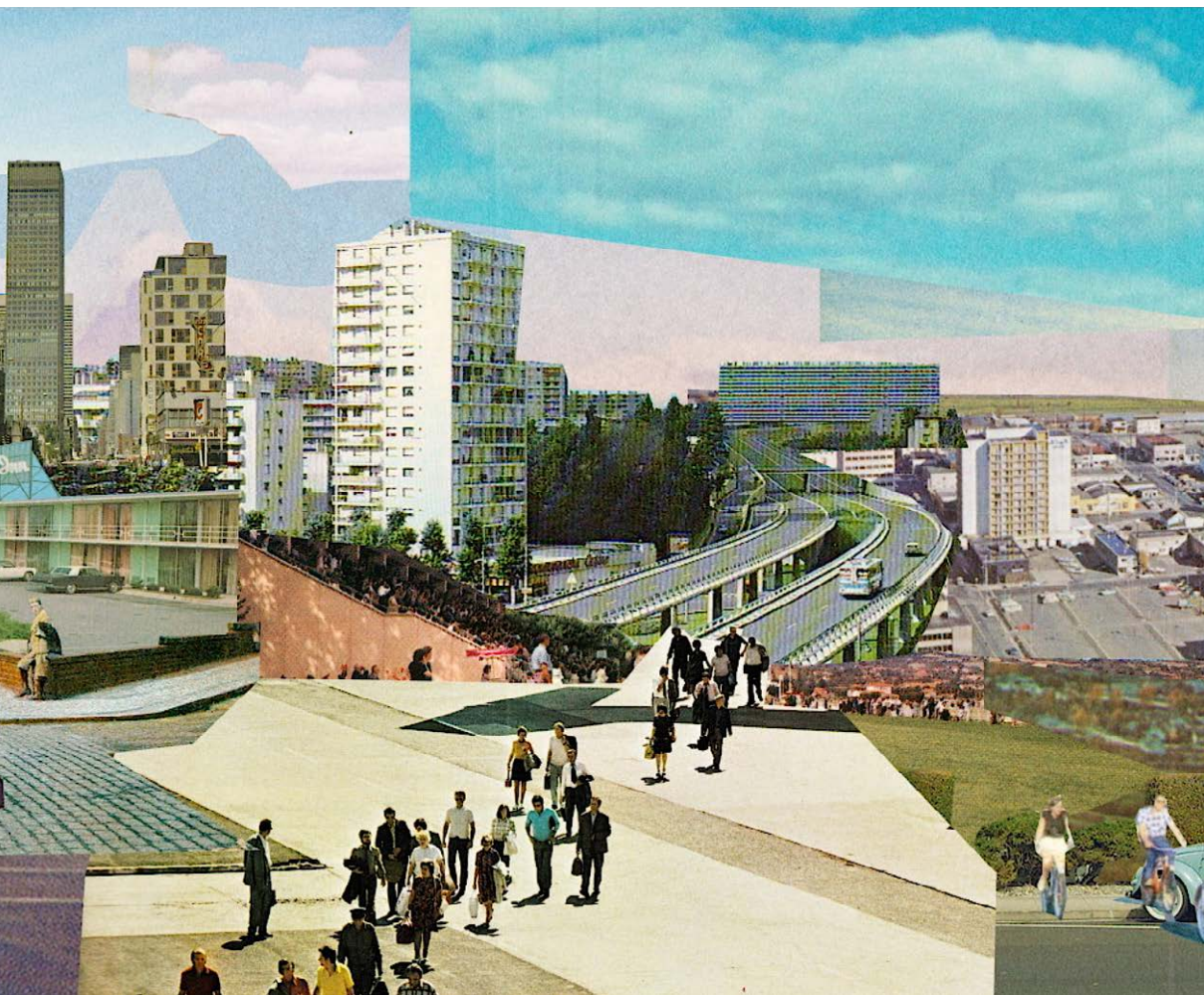


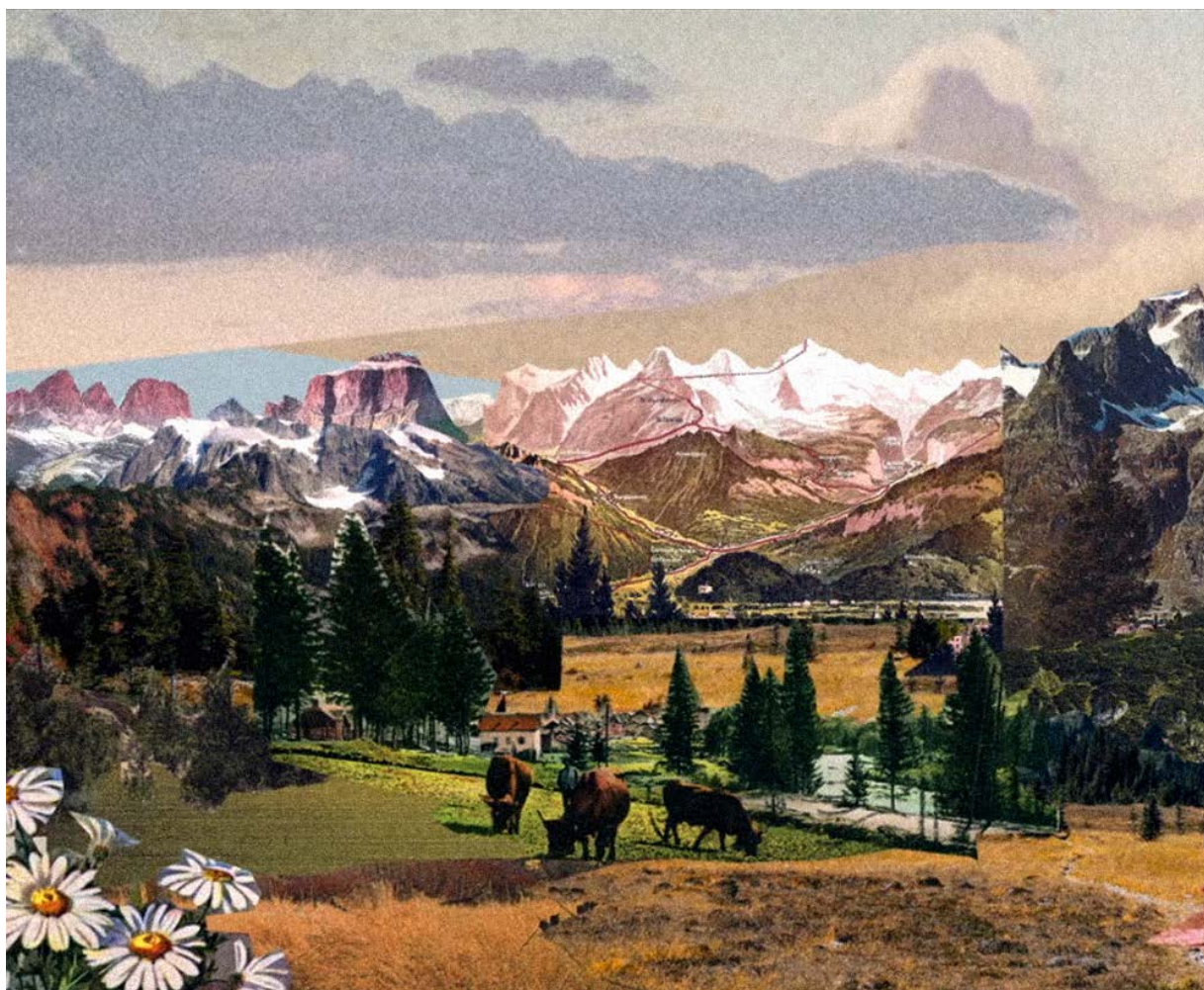
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Back to nature, 2017
Collage / digital animation



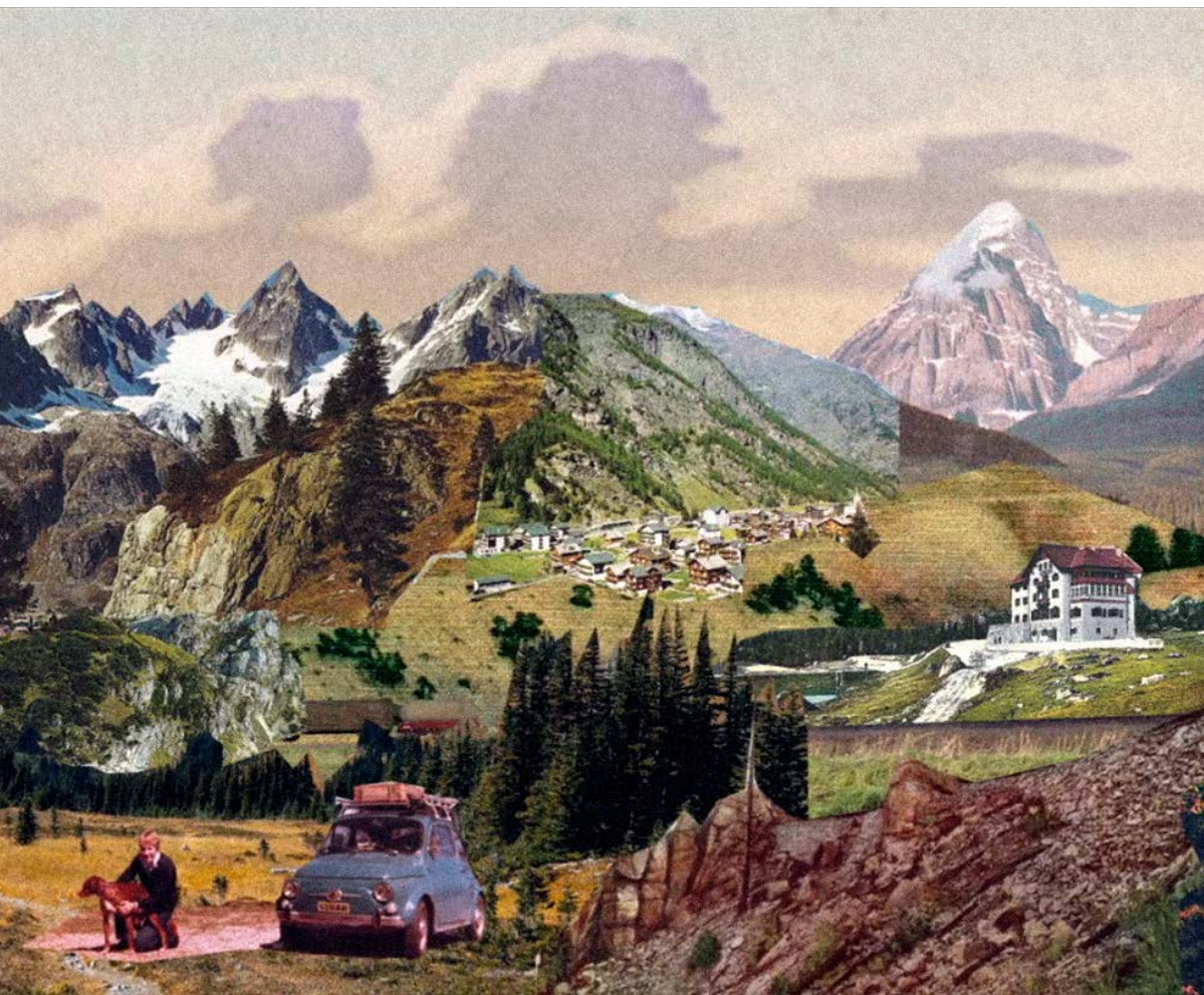


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João Pombeiro
Kite, 2017
Collage / digital animation



On Perspective as Depth Simulation

ABSTRACT

Perspective is a method for binding together polar oppositions within a single frame: subjective/objective, present/past, unity/infinity. Principal among these is the negotiation of proximity and distance, that is, perspective as a means for simulating depth. This is particularly true for the simulation of perspective in computer graphics and digital games. One of the earliest and most challenging problems for graphics researchers was how to computationally determine whether an object or surface in a given scene should be visible to a viewer, or if it was in some way occluded by another object or surface. This altogether mundane phenomenon opens up a surprisingly rich set of questions around the limits of human vision, and how to impose limits on what can or

should be visually simulated by a computer. Still today all graphical simulations must contend with the question of where to draw the limits of embodied vision. Where does the simulation stop? Where does the render end? This chapter examines the question of depth and distance through a set of three technical objects designed to set the limits of visibility in computer simulations. In tracing the history and development of depth simulation over the past forty years and identifying the modes of simulation that inform the z-axis as a vector for the simulation of vision, I ultimately ask what a historical examination of distance in computer simulation can tell us about the ways we computationally produce and restrict visual knowledge today.

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Perspective is a highly fluid technique prone to transformation and metaphor, one that modifies itself to suit the medium in which it is deployed. It is likewise dialectical, as James Elkins has argued, in that it is a method for binding polar oppositions within a single frame: subjective/objective, present/past, unity/infinity, etc¹. Yet the reductive metaphor that seems most useful in thinking through perspective as an apparatus both for art historical and computational images is the negotiation between proximity and distance, that is, perspective as a means for simulating *depth*. We often speak of perspective as the projection of a given scene for a single viewing subject, a kind of conical gathering of the world such that it is made legible *to* that subject. Its directionality is, in this sense, funneled inward, toward the eye. It is centering. It privileges an individual subjectivity. As Friedrich Kittler once argued, “Representational thinking delivered being as an object for a subject ... [and] linear perspective and the camera obscura were precisely the media of this representation”². At the same time, much of what makes perspective a technological and mathematical innovation is its ability to represent distance. We find it in the horizon line of a painting, and in its single or multiple vanishing points, techniques that signal the absolute limit of our depth of vision, where an implied infinite unfolding is collapsed into a single, one-dimensional horizontal expanse. Thus, even in painting, perspective offers the accurate representation of depth by acknowledging the limits of vision itself. True depth is infinite and, therefore, radically inaccessible. Herein we see this opposition that Elkins describes. Perspective centers the single subject by turning the world toward its eye, while also constructing the illusion of an infinite depth made uniquely accessible to that subject. But what happens to this illusion when it becomes computational, that is, when its operative mode is no longer representation but simulation?

In what follows I will argue that this transformation maps onto a shift in the way we think about depth with regards to human subjectivity. That is, rather than simulating distance as the limit point of embodied knowledge — an implied infinity — computer graphics simulate depth through a complex negotiation of human vision, computer processing power, and, for lack of a better term, narrative function. In computer simulation depth is denaturalized and must be reconstructed in a way that suits its technical, material, and cultural context. It is made serviceable in a way that is radically different from its classical use and the metaphors we associate with it. To examine this, I will explore the simulation of depth in three parts or layers — first historical, then material, and finally cultural — in order to understand the unique rules of computational perspective. My hope is to trouble the link between perspective as a historical form for the simulation of vision, and depth as a relational system for the simulation of distance. In doing so I hope to make visible the persistence of perspective as a deeply

embodied cultural technique for the production of subjectivity, while also refusing narratives of natural or logical inheritance in which computational images simply adopt, digitize, and simulate the formal techniques of prior media forms.

Depth as Historical Distance

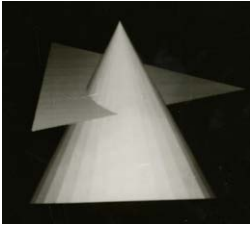


Figure 1
Early hidden surface algorithm test image at the University of Utah, 26 March 1968. Special Collections Dept., J. Willard Marriott Library, University of Utah.

Distance has always posed a unique challenge for computer graphics. Indeed, one of the earliest and most vexing problems for computer graphics researchers in the mid-twentieth century was known as the visibility problem or hidden surface problem. The challenge was in finding a way for a computer to determine whether an object or surface in a given scene should be visible to the viewer, or if it was in some way occluded by another surface that lies between it and the viewer [Figure 1]. In other words, the computer must be programmed to understand depth as a relational quality between objects in a scene, since by default the computer possesses full knowledge of all objects in their totality, and therefore must preemptively subtract that which should be invisible such that it may be made legible to us.

Prior to the 1970s this had not been the case, as graphical objects were produced largely as wireframe models with no surfaces, from which all edges were simultaneously visible³. While these images may be suitable for certain tasks, the more complex an image became, the more difficult it was to identify and differentiate the object at hand. What's more, even simple objects can create illusions when viewed from certain angles, in which a given set of lines overlap and collapse the image into an abstract form. Outside of these practical concerns, there is the desire for realism. When we look around the world, we see opaque objects that we cannot see behind. Yet it is hard to make objects displayed by a computer look similarly opaque, and even more so when an image is to be rendered in real time or at scale. We can think of Merleau Ponty's lamp in *Phenomenology of Perception*, to which we can attribute not only the qualities visible from our own perspective, but also those which we can presume that are invisible to us. As he notes, "the back of my lamp is nothing other than the face which it 'shows' to the chimney"⁴.

Likewise, the visibility problem is important precisely because of the ways it does not map onto existing methods for representing depth and simulating perspective. For film and photography opacity and transparency are natural properties of light as it reflects off objects and through an aperture. Visibility is built into the indexical function of those media modeled on the tradition of the camera obscura and does not need to be calculated. While the elimination of hidden lines may seem trivial, as it is built into our phenomenological experience of the world, in fact it was one of the

most significant challenges for the field of computer graphics well into the 1970s. This is due not only to the complexity and variety of solutions to the problem, but also to the processing limitations of the computers of the period. In fact, it is conceptually easy to eliminate hidden lines by brute force — point-by-point, line-by-line — but this task becomes exponentially more difficult as objects increase in number and complexity. As such, computer graphics required a scalable solution for the elimination of invisible data, a means by which it might preemptively omit the calculation of that which should not be seen.

In this sense the visibility problem lays bare the surprising challenge of simulating the inaccessibility of the invisible, a property that hinges on the proper simulation of depth as a relational form. Thus, for well over a decade, graphic researchers struggled to find an accurate and efficient algorithm for this problem, a calculation that could be made *in software* to quickly account for the spatial relationship of objects in each scene. Ultimately, however, it was *hardware* that provided a lasting solution that would grow into an industry standard still widely used today. In his 1974 PhD thesis at the University of Utah, Edwin Catmull proposed a graphical workstation with a built-in grid of random-access memory or RAM that could be used to store the depth value of all visible objects in a scene, an object he called the z-buffer, named after the depth axis in three-dimensional image space⁵.

Rather than try to calculate the relational position of all objects in a scene, the z-buffer could simply store their depth as a numerical value to be compared with the depth value of other objects in a scene, adapting as objects moved or transformed over time. Of course, in the mid-1970s this was an outrageously expensive solution and was only possible for Catmull because of his access to the most recent innovations in graphical workstations at the University of Utah, which was at that time the most significant graphics research center in the United States, funded largely by the Department of Defense and its Advanced Research Projects Agency — what is now known as DARPA. Subsequently, as the price of memory fell, it became both feasible and practical to crystallize the material logic of depth into a hardware object devoted exclusively to this task, and today the GPU found in every computer, smartphone, and game console has a memory buffer devoted exclusively to storing depth calculations. Thus, to properly simulate the depth of an object such that it can be incorporated into a perspective projection, its position must be physically fixed in an integrated circuit. How far we are from the depth offered by earlier visual forms, with their privileging of the fixed position of a single viewing subject. Where do we locate perspective now, when it is stored in the raster grid memory of an integrated circuit?

In most applications the z-buffer now serves as the *de facto* solution for the visibility problem and has remained relatively

constant over the past forty years. Nonetheless, through the z-buffer we can begin to address the transformation that digital games and interactive graphics have brought about, whereby perspective shifts from a static property to a dynamic simulation, such that computer graphics must store, exploit, and negotiate depth to produce a kind of visual realism that may appear analogous to earlier methods but is in fact radically transformed.

Depth as Visual Pass

In truth the z-buffer is only the beginning of this much larger transformation. While its initial value was hidden surface removal, over the past forty years it has become an important tool for 3D imaging as a whole and is one of many so-called “visual passes” that an image undergoes as it makes its way through the rendering process. While the pictures we view as consumers of rendered images appear flat and two-dimensional, they are in fact comprised of a large number of renders that have been composited together, each providing different types of information that can be manipulated by the computer without compromising or re-rendering the complete final image.

The visual pass produced by the z-buffer results in a so-called “depth map,” which functions almost like a radar image or MRI scan, interpreting objects according to their relative distance. Those closest to the camera are black, while those farthest away are white, receding into infinity not unlike the horizon line of classical perspective. For digital rendering in film and visual effects, this depth map is an essential tool for manufacturing depth effects in post-production. If, for example, we wanted to blur an image to simulate depth of field, or shift focus in a scene from the foreground to the background, we could not achieve this without an accurate map of a scene’s depth. For film and photography this is a property of the optical device itself, with the aperture of a camera producing depth of field in a way that reads as analogous to human vision. In a computer, however, this must be simulated after the fact, as there is no physical lens to modify. For this, depth mapping is used.

Yet while these images are striking and illustrative of the process I’ve described, they are not, in fact, intended to be seen or interpreted by a viewing subject. While we certainly *can* view this image, it is for all intents and purposes not *for* us. Its visualization is incidental to its function. Its gradient shade is not an abstraction or interpretation produced so that we can better understand the function of the buffer, it is an indexical trace of the data stored in the buffer itself, a number for every pixel corresponding to object proximity within that pixel, scaled from the darkest black to the lightest white. This is data visualization in the purest sense, where the image we see corresponds directly to what the computer sees,

Figure 2

Warburton, Alan, *Z*,
Video, 2012, [https://
alanwarburton.co.uk/
page-z](https://alanwarburton.co.uk/page-z).



to what is stored in the bitmap itself. While historically computer graphics have been understood as those visual images rendered out from the computational materiality of software, hardware, and code — abstracted into a representational form that is legible to a viewing subject — in the depth map we are viewing an image bereft of that abstraction, in which each pixel corresponds directly with a bit value stored in a physical buffer. Just as the computer reads this buffer to register depth information, we too read the gradient to determine the appearance of a scene deprived of all visual information save the relational proximity of each object to our viewing position.

While these images may not be *for* us in the strictest sense, that doesn't stop us from repurposing the depth map to aesthetic ends. In a short video work from 2012, simply titled *Z*, the British artist Alan Warburton explores the function of perspective as a technique for the production of historical vision in computer simulation⁶. Opening on an empty screen of pure white, the work follows a virtual camera as it tracks forward along the z-axis, revealing an eerie scene of shaded objects that emerge from this blank field into the middle distance before disappearing into a sea of black as they move behind the camera and beyond our vision. Over the course of its three-minute runtime we watch a seemingly deserted cityscape materialize before us, moving through empty office buildings, past makeshift tent encampments, and alongside military tanks frozen in time [Figure 2]. The scene appears to capture a dynamic moment in the history of a city emptied of its inhabitants. We might even mistake the scene for a static landscape were it not for the swirling particle effects of paper and trash that occasionally blow past as we continue our relentless movement forward. The work foregrounds the impermanence of any single perspective by refusing us a totalizing image of the space we inhabit. We are therefore left with an impartial vision that ultimately disappears into the same sea of white with which it began.

While the work is striking in its simplicity, there is a larger argument at work here. Much of Warburton's work engages with and aestheticizes the labor of digital image production, with particular focus on 3D modeling and visualization. In *Z* Warburton makes a similar gesture, using the depth pass as a kind of readymade. What seems an exceptional object for us, perhaps, is a rather mundane and everyday part of the render process for any CG artist. Nonetheless it produces a kind of "selective vision" that reflects the work's broader theme, which for Warburton is the production of historical narrative. As the artist notes, "*Z* is about how we make sense of the clutter of current events, how we create epochs, and how, in an era of intense global change, we are affected by a kind of long term myopia that obscures us to the larger forces at work"⁷. Depth here is a function not only of vision, but also a means of reflecting on the limits of what can be made sensible in the broadest sense.

Depth as Cultural Context

This brings me to a third set of objects for the simulation of visual depth, and what is perhaps the most visible and legible set of images for the negotiation of distance through perspective projection. Here I hope to examine a set of cultural practices that both enable new forms of three-dimensional visualization while ultimately transforming more traditional techniques for the production of depth, such that all manner of visual technologies come to mirror the visual claim of computer graphics.

It is possible that the eerie scene of Warburton's short film may seem familiar to anyone who has played a contemporary 3D digital game, if not in content than at the very least in tone and aesthetic. The hazy fog that seems to envelop the scene is not unlike environments found throughout a wide range of modern video games, and indeed this is no coincidence, as the z-buffer is also used for the real time production of distance effects in digital games, which must constantly work to contain and direct the vision of its players in a given landscape. Traditionally this could be done through level design, creating pathways that restrict and direct player movement. In outdoor scenes this becomes more difficult, and so games often restrict what can be accessed and seen through visible or invisible barriers — for example endless oceans that a player cannot cross, or inaccessible mountains too steep to climb. But as the scale and scope of games has grown, developers have had to come to terms with expanded scenes and greater distances. How do we negotiate visibility in the landscape of a game where openness and exploration are central features of the game's design?

The answer is what is commonly referred to as distance fog, that is, the layering of fog in a scene to enhance the perception of

ON PERSPECTIVE AS DEPTH SIMULATION

Figures 3, 4
Screenshot from
Assassins Creed: Syndicate
(2015) with and without
distance fog.



distance. This effect, once again, is produced by an interpretation of the depth map, where objects at a certain distance recede into a faint haze that obscures and restricts vision. This allows objects at a distance to be rendered in less detail, part of a ubiquitous but entirely invisible method for accelerating the rendering process known as mipmapping, in which pre-calculated sequences of images, each with a progressively lower resolution, are used to represent objects as they recede into the distance⁸. What may seem like laziness also serves a particular material function, as this technique is meant to simulate the effect of light scattering or diffraction, which causes distant objects to appear lower in contrast, particularly in outdoor environments. However, it is also a site at which embodied vision must be negotiated with the limitations of a given computational system. Rendering a scene in absolute depth is not only taxing and difficult for most personal computers or modern consoles, but it can also reveal too much of the scene of play, granting users an unwanted advantage by revealing parts of a game not yet accessible. Though more than

anything it often looks unrealistic — perfect clarity at great distance conflicts with our embodied experience, and so in this instance a kind of simulated realism demands less clarity, less vision.

This distance fog effect can be seen in almost all games to some extent but is perhaps most interesting for the way it is incorporated as a narrative device or genre effect. For example, in *Assassin's Creed: Syndicate* (2015) distance fog adds to the overall atmosphere of the game narrative, which set in Victorian Era London at the height of the so-called London fog, caused by the domestic burning of coal and other pollutants mixing with the mists of the Thames valley. Without the fog the game's atmosphere is lost, and the player gains visual access to parts of the map that haven't yet explored [Figure 3 & 4]. We see this again in the smog of *Grand Theft Auto V* (2013), set in the fictional city of Los Santos, based on the greater Los Angeles metropolitan area, and plagued by a smog that blocks distant vistas beyond the playable game space. Once again, were we to strip away this distance effect we could see that the fog hides a simple background texture, and that the illusion of immersive depth that is the hallmark of this open world genre is predicated in part on this unique form of depth simulation.

In a sense distance fog — made possible again by the z-buffer and its depth map — serves as the functional horizon line of 3D game spaces, marking the edge of our perception from a given perspective. Again, this is a limit not of human vision but of computational power, and an active restricting of a desire to see beyond that limit. To be sure, there is a great deal more that could be said here about the ways in which computer graphics negotiate the illusion of depth through the simulation of perspective, but my goal here has been to demonstrate how radically dissimilar these simulations have become to what we might think of as classical perspective when viewed through the history and contemporary use of computer graphics, with the z-buffer serving as a kind of medium for the production of distance. Perhaps most significantly, in analyzing the z-buffer and its attendant technologies as historical, material, and cultural objects we can see the various ways in which computer simulation makes sense of the world precisely by excluding that which does not correspond with the limits of its perception, a process that is as much about manufacturing invisibility and restricting vision as it is in reproducing a kind of visual realism or perspectival form.

Notes

1. Elkins 1994.
2. Kittler 2010, 75.
3. For a detailed discussion of the hidden surface problem, see Gaboury, Jacob. 2021. "Culling Vision: Hidden Surface Algorithms and the Problem of Visibility" in *Image Objects: An Archaeology of Computer Graphics*. Cambridge, MA: MIT Press, pp. 27–54.
4. Merleau-Ponty 2002 [1945], 79.
5. Catmull 1974.
6. See Alan Warburton Z (2012), Video, available at <https://alanwarburton.co.uk/page-z>.
7. Warburton, *ibid*.
8. Williams 1983.

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Domestic Proscenium: Television in the American Postwar Suburban House

ABSTRACT

This paper intends to analyze the dynamics of the North American suburban house with the television device, taking into account its impact on the paradigm change of the space of representation and the social space in the domestic context.

The arise of the American Suburbia and television are simultaneous and mutually influenced by each other. Both, the modern large window house typology and television have allowed the world to enter the house, providing real and hypothetical travel for the spectator. Causing not only changes in the domestic life itself, but also in the way domestic life came to be represented.

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Introduction

The exodus of the American middle class from the city center to the periphery during the 1950s and 1960s, has coincided with the spread of this new domestic element: the television.

The contamination of the domestic space and of the family routines by the television reality led to a “theatricalisation” of the living room. The place of the television should be favored as the social center of the home. Television became the place of the stage, and the sofa became the place of the audience. The relationship between family routines and television is, moreover, a very common theme in films, series and soap operas from the 1970s and 1980s.

Television has re-organised the social space of the house introducing significant changes in the dynamics of entertainment and leisure that were progressively incorporated into the home.

The typology of these new and modern houses also provided a wide visual reach to the world. The North American periphery, which emerged in the 1950s, inaugurated a new space production based on the dilution of the boundaries between public-private, proximity-distance, domestic-urban. Besides establishing a comfortable relationship with the city, induced by the trivialization of car use, the suburban house enhances a pleasant relationship with the neighborhood, the increase in visual permeability provided by the large and wide window typology, and the integration of television in everyday life.

Modern large windows and television have allowed the world to enter the house, providing real and hypothetical travel for the spectator. Causing not only changes in the domestic life itself, but also in the way domestic life came to be represented.

Television and suburbs are both engineered spaces, designed and planned by people who are engaged in giving material reality to wider cultural belief systems. In addition, media and suburbs are sites where meanings are produced and created; they are spaces (whether material or electronic) in which people make sense of their social relationship to each other, their communities, their nation, and the world at large¹.

The American postwar period has witnessed the emergence of a massive built periphery simultaneously with the spread of the Television. The increase of visual permeability was provided by the the application of some principles of modernist architecture and the reduction of distances caused by the banalization of automobile use, which increasingly blurred relations of proximity / distance, inside / outside.

Powered by the automobile and motorways, the exodus of the middle class towards the outer city limits represented a conquest based on mobility and on the expansionist idea of unlimited territory where, supposedly, is located the *Promised Land*. Beyond the establishment of a comfortable relationship of proximity-distance either with the neighborhood either with the city, the suburb carries in itself an illusory personalization of the domestic space reproduced in single-family houses.

Through a “modern”, comfortable, house-with-garden and large-garage-for-one-large-car lifestyle, the suburb represents a bittersweet construction of domesticity. On one hand this emphasizes the fulfillment of ambitions and its ostentation, on the other hand gives a new impetus and meaning to consumer culture and masses. In addition to this search for belonging, identity and meaning, the average American middle-class individual faced the possibility of becoming an owner:

By purchasing their detached suburban homes, the young couples of the middle class participated in the construction of a new community of values; in magazines, in films, and on the airwaves they became the cultural representatives of the ‘good life’².

The North American periphery, that emerged in the 1950s, was where the American middle class found a harmonious middle ground in the massive configuration of tree-lined streets, delimited by single-family houses, all with the same configuration, with a garden, a barbecue and a garage. The post-war suburban villa became the *ex-libris* of the American Dream.

Moving in to the suburbs was a closest representation of what the Declaration of Independence proposed when it enacted the “Right to Freedom and the pursuit of Happiness” as the inalienable right of the American citizen. The North American periphery constituted thus the realization of the promise to live in the “America” project: “American pursuit of happiness degenerated into an obsessive pursuit of pleasure, both indulgent experiences and beautiful things”³.

Enforced by modernist architecture principles, the contamination of the inside by the outside and vice versa is provided, in part, by large sliding windows, that also emphasized the modernity of these houses. The *Window*, in this context, allows this fluidity of space between the domestic and its own neighborhood, which so clearly defines the north-american suburban way of life.

The large glazed windows enabled the modern and sophisticated mothers with their well-equipped kitchens to make dinner and other household chores without losing control of their children playing in the garden. This configuration of the home calls upon the mother to play a role that allows her to act before the presence of a particular and eventual set of observers, either for the family members either

for the neighbours: “the fact that [...] this audience is indeed at home is not without consequences. The private is, in this sense, now more public than the public”⁴.

The configuration of everyday life in a single-family detached house evokes a genre of privacy that a block of flats does not offer. At the same time, it encourages the construction of a healthy life within the community, where ideally the community itself appears as the collective emancipation of a certain homogeneous socio-economic, age and racial range, with very specific intentions and objectives, as “[...] the central preoccupation in the new suburban culture was the construction of a particular discursive space through which the family could mediate the contradictory impulses for a private heaven on the one hand, and community participation on the other”⁵.

This pleasant relationship with the window has fostered the emergence of a prominent place for the element that would reconfigure the entire layout and dynamics of the room and suburban family life: “Given its ability to merge private with public spaces, television was the ideal companion for these suburban homes”⁶.

This co-existence between the window and the television will not only have allowed this permeability between the domestic interior and the exterior of the neighbourhood, but it will also have amplified a performative consciousness inside the house, transforming it into a theatre box where its inhabitants “are both actors and spectators of the family scene involved in, yet, detached from, their own space. The classical distinction between inside and outside, private and public, object and subject, becomes convoluted”⁷.

The contamination of the domestic space and of the family routine by the television reality led to a “theatricalization” of the (living) room. The layout of the space should privilege the place of the television as the social center of the home. Television would, from now on, assume the place of the stage, and the sofa would assume the place of the audience, giving the residents a bundle of abstraction and more-than-private space within their own home and their own family. The aesthetics and the reconfiguration of the home as a function of the television set was extensively promoted by magazines, catalogs and advertisement of home and decoration:

[P]ostwar home magazines and handbooks on interior decor presented an endless stream of advice on how to make the home into a comfortable theatre. In 1949, for example, *House Beautiful* advised its readers that ‘conventional living room groupings need to be slightly altered because viewers look in the same direction and not at each other.’ *Good Housekeeping* seconded the motion in 1951 when it claimed that ‘television is theatre; and to succeed, theatre requires a comfortably placed audience with a clear view of the stage.’ Advertisements for television sets variously referred to the ‘chairside theatre’, the ‘video theatre’, the ‘family theatre’, and so forth. Taken to its logical extreme,

this theatricalization of the home transformed domestic space into a private pleasure dome⁸.

It is, however, in the materialistic and resigned strength of the '80s that television becomes an institution. Omnipresent, stimulating and absorbing, it has spread in quantity and diversity of technology, channels, television stations, programs, cable companies and mediatic experiences. It is, from 1980 onwards, that CNN (Cable News Network) emerges, the first cable channel with twenty-four hours a day news, MTV (Music Television) or ESPN (Entertainment and Sports Network) offering spectators an easy and endless world of entertainment, anytime, with a wide choice of channels and specificities, all from the distance of a remote control:

During the 1980s, the American media was becoming more fragmented yet concentrated. Even as a niche marketing developed, even as the three-network oligopoly dissolved into the hundred-channel cable galaxy, the center of gravity in the media universe emerged stronger than ever. [...] [C]ulture and [...] standards demonstrated the power and ubiquity of the modern media.⁹

The relationship between family dynamics and television became reciprocal. Domestic and family daily life became a frequent theme in the television series and soap operas, particularly from the late 1970s and the 1980s and 1990s. The reversal of the spectator's place is evident in such series as *All in the Family* (Norman Lear, Johnny Speight, 1971–79), *The Cosby Show* (Bill Cosby, Ed. Weinberger and Michael Leeson, 1984–92) or *Family Ties* (Gary David Goldberg, 1982–89). The camera was placed precisely where the television set was, and in many moments the spectator glimpsed his own portrait: a whole family sitting on the couch, watching each other on the other side. In any case, television plays with the complicity of those who watch it, subverting the place of the Home, which becomes either the stage or the audience.

Television has helped to re-build an imaginary of “family”, placing these family ideals at the centre of the television stage, and simultaneously turning it into its most significant spectator. Bearing in mind that “Discourses on television drew upon and magnified the more general obsession with the reconstruction of family life and domestic ideals after World War II. [...] [In '50s] television was typically welcomed as a catalyst for renewed domestic values.”¹⁰

In the '80s, the return to and refuge in the familiar setting are associated with an implied nostalgia for the prosperous, conservative America of the 1950s, resurrected by the Reagan atmosphere: “The Reagan presidency was all about nostalgia. Nostalgia for small town values, revival of traditional virtues — prosperous America of the '50s — mum and apple pie”¹¹.

TELEVISION IN THE AMERICAN POSTWAR SUBURBAN HOUSE

Figure 1
American Family watching television, '50s



Figure 2
Mother in an American Suburban kitchen, '50s



Figure 3
"All in the Family",
Norman Lear, 1971-79



Figure 4

"The Cosby Show", Bill Cosby, Ed. Wienberger & Michael Lesson, 1984-92

Figure 5

"Alf", Paul Fusco & Tom Patchet, 1986-90

Figure 6

"The Simpsons", Matt Groening, 1989-



The family theme is a trend during this period. But instead of the family depicted in the 1950s, in the 1980s the representation focused mainly on the non-normative family. The eighties celebrate and simultaneously ironise the search for and return to family stability. However, rather than a tender approach, there is a sarcastic, comic and subversive perspective on family dynamics: “TV changed family life — and fueled anxieties about family cohesion — from its very beginning”¹².

Note that some of the various sitcoms of this era were based on the idiosyncrasies of a particular family, but mainly on its dysfunctions — like *Alf* (Paul Fusco, Tom Patchett, 1986–90), *The Golden Girls* (Susan Harris, 1985–1992) in addition to the aforementioned *All in the Family* (Norman Lear, Johnny Speight, 1971–79), *The Cosby Show* (Bill Cosby, Ed. Weinberger and Michael Leeson, 1984–92) and *Family Ties* (Gary David Goldberg, 1982–89) — or in films like *E.T.* (Steven Spielberg, 1981), *Hannah and her Sisters* (Woody Allen, 1986) or *Rain Man* (Barry Levinson, 1988). The non-sense, the unusual, the particular, the odd or the aberrant represent not an escape, but a reunion, a symbolic and/or literal restructuring of the family, as well as a reinsertion into society.

Family “dysfunctions”, be they psychoanalytic, relational, due to the absence of biological parental links, or to the presence of adoptive elements, (even if they are extraterrestrial) are dealt with acceptably and humourously, broadening the spectrum of what is considered normal. Reconfiguring, simultaneously, the *family* ideal “through an embrace of the American Dream — as a literal dream of the American family”¹³.

Like the window, the screen not only frames the scene, but also delimits the space-that-is-between allowing for the extra and trans territorial break in which “the real world appears in the image as it were between parentheses”¹⁴ in a consequent inhabit-for-a-while: “[T]he relationship between public/spectacle and private/spectator was inverted. The spectator was now physically isolated from the crowd, and the fantasy was now one imaginary unity with “absent” others”¹⁵. And it is in this context, Baudrillard attenuates the border between an artificial experience and a real experience of domestic television consumption:

[F]rom the perspective of the satisfaction of the consumer, there is no basis on which to define what is “artificial” and what is not. The pleasure obtained from a television or a second home is experienced as a “real” freedom. No one experiences this as alienation¹⁶.

This new typology and lifestyle provided a wide visual outreach, establishing a relationship of staticity and movement that gave the residents the possibility of being-all-over-the-place-without-ever-actually-being-there: the large windows and the television allowed

the world to enter the home, providing trips that were sometimes near sometimes distant, real and hypothetical to the viewer. With the advantage of experiencing only its charms, it kept it protected from its threats, enabling a ubiquity, hitherto unprecedented.

Both the proliferation of the American suburbia and television, have expanded the effectiveness of social practices and cultural fantasies of the emerging suburban class. Fiction became, then the only truly possible Home to be dwelled, providing this feeling of inhabit-for-a-while, where television was the catalysing proscenium within the Home.

The idyllic lifestyle constituted the illusory scene that was borrowed from television reality and later returned. In this way, television was the device that not only established the theatricality of the living room and a set of family rituals around it, but actually through which the ideals of the suburban family were in fact performed.

Conclusion

The villa of suburban America represents a place that is in between, divided between the city and nowhere, the Home and non-belonging, between the idyllic and the mass-constructed housing. The exodus of the middle-class, from the center of the city towards a not-surewhere-but-potentially better modern and ideal lifestyle, promotes this staged and plastic familiarity:

Television provided an illusion of the ideal neighbourhood — the way it was supposed to be. Just when people had left their life-long companions in the city, television sitcoms pictured romanticized versions of neighbour and family bonding¹⁷.

Television was, therefore, the window that promoted a new way of representing the family and its domesticity in the 1950s, as it will also have instituted, already in the 1980s, other ways of representing and new family representativities. The television proscenium absorbed the suburban family dynamics and subsequently have spread and promoted the implementation of fictions and ideals of domesticity of the modern and post-modern family.

There is an interaction between television reality and domestic reality where both lend themselves to each other, blurring the barrier of what Baudrillard calls “artificial” and transforming fiction into the place where the North American suburban family dwells par excellence.

The representation and staging provided by suburban life and by television, defined family dynamics for which the television set constituted a determining and structuring element in the architecture of their fiction(s).

Notes

1. Lynn Spigel, *Welcome To The Dreamhouse — Popular Media and Postwar Suburbs* (Durham and London: Duke University Press, 2001), 15.
2. Spigel, *Welcome To The Dreamhouse — Popular Media and Postwar Suburbs*, 32.
3. Gil Troy, *Morning in America — How Ronald Reagan Reinvented the 80's* (New York: Princeton University Press, 2005), 119.
4. Colomina, Beatriz, *Privacy and Publicity — Modern Architecture as Mass Media* (Woburn, Massachusetts: MIT Press, 1996), 08.
5. Spigel, *Welcome To The Dreamhouse — Popular Media and Postwar Suburbs*, 32.
6. Spigel, *Welcome To The Dreamhouse — Popular Media and Postwar Suburbs*, 33.
7. Colomina, Beatriz, *Sexuality and Space*, (New York: Princeton Architecture Press, 1992), 80.
8. Baudrillard, Jean, *Selected Writings*, (Stanford University Press, 2001), 39,40.
9. Troy, *Morning in America — How Ronald Reagan Reinvented the 80's*, 124.
10. Spigel, Lynn, *Make Room for TV — Television and the Family Ideal in Postwar America*, (Chicago and London: Chicago University Press, 1992), 02
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The illusion of Open Space — The use of technology and design tools to mitigate confinement in urban underground spaces

ABSTRACT

This study reviews how technological resources or design tools included in the architectural project serve to mitigate the uneasiness caused by the sensation of confinement that some people suffer during their utilization of urban underground spaces. Users may relate such spaces with negative attitudes that lead to discomfort, a prejudice partially generated by the absence of natural light and lack of views to the outdoor. Considering that such features are not naturally present underground, positive stimulus shall be constructed to counterbalance negative impressions that may occur. Thus, the study makes an introductory review of the tools that are being used to create a man-made illusion of openness or, at least, to distract the user about the fact of his confinement while staying underground.

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Introduction

Nowadays, urban underground spaces have assumed an omnipresence in the layout of countless metropolises and, daily, thousands of people pass through them, whether in metro stations, tunnels, or pedestrian crossings.

Although this use is already integrated into the daily lives of city dwellers, studies have shown that some users can easily relate such environments to negative attitudes or images (Carmordy & Sterling, 1984) and associate their use with feelings of isolation, imprisonment, fear, and restlessness (Hane et al., 1991; Hollon et al., 1980; Ringstad, 1994 cited in Soh, Christopoulos, Roberts, & Lee, 2016). Although many cultural factors contribute to the formation of this negative perception, it is known that two factors contribute decisively to this result: the lack of natural light and the disconnection from the outside world in the absence of windows (Carmordy & Sterling, 1987).

The comfort of users in built environments should be a concern of any architectural project and the incidence of natural light and openings to the outside are, indeed, requirements of the occupational health of buildings. Nevertheless, in underground spaces, the rationale normally used to solve these issues at the surface, based on transparencies and openings through windows, cannot be applied in the same way below ground. This is because, by their nature, such spaces are devoid of both natural light and connection with the outside world above. So, in addition to the common challenge of the environmental quality of the built space, while underground, it is also necessary to consider how the project can mitigate some of the negative relationships that may arise between users and their (confined) surroundings¹.

This study reviews some contemporary ways in which positive stimuli are incorporated into the projects of these underground spaces through technological resources such as the use of images and different light spectra and design tools such as the use of perspective that are conceived to create an illusion of openness or breadth or, alternatively, to distract the user from the fact of his confinement. Through the examples, it is possible to understand how illusion can be a useful instrument in the context of experimenting with the built environment. Thus, it is suggested that it is possible to alleviate, albeit subtly, the discomfort, which would increase the user's well-being during his stay underground.

From the idea of “openness” in Roman frescoes to the activation of modern underground spaces.

The idea of manipulating human perception to make the person believe that he is in a wider or open space even though they are fully inserted in an interior space is not new. The use of this resource was even the differential element of the so-called “Second Style” of mural decoration made from fresco paintings in Roman dwellings in the period between 80 BC and 14 AD. In this style, for the first time, the walls were used as a support for paintings that create an illusion of openness to the outside world through the design of an architecture that expands the interior space to meet an imaginary landscape using perspective in the drawing to create layers of depth (Davide, undated).

Maracajá Daltro (2011) reminds us that to have a simulation or suggestion of an effect in the context of immersive space, its imagery support (and here it does not matter which medium is used) must be illusory rather than mimetic. That is, the illusion may not be related to the context of the space in which it is produced because what matters is to achieve an illusory result on the observer and not the reproduction of reality.

In the remodelling of the Croix-Rousse tunnel in the city of Lyon, the forecast for the installation of a road for mild modes (those made by foot or by bicycle) ran into possible reticence regarding its use due to the length of the route of approximately 1.7 km, capable of causing discomfort in some users. The solution found was to create a virtual animation composed by the projection of images in video-mapping accompanied by a sound installation² that modified the inner space of the tunnel, transforming what would be a monotonous crossing into an immersive journey in an oneiric universe [Figure 1]. Similarly, the 24.5 km long Laerdal Tunnel implied problems of stress due to confinement and hypostress due to deficits in attention because of the monotony of the long route. These were mitigated in such a way that the sections of the long tunnel are interspersed with large, intensely lit spaces to generate an (illusory) perception in the user that he is driving towards an open space.

The advent of light-emitting diode technology with its wide spectrum of colours, low heat production and low energy consumption has made it possible to overcome a chronic deficiency of underground spaces that are often poorly lit³, which leads to interpretation as unsafe or even claustrophobic places. The use of led lighting has recently diversified into the activation of spaces whose use may prove to be problematic,

THE ILLUSION OF OPEN SPACE

Figure 1
Croix Rousse Tunnel,
Lyon, France.

© Clement Saunier
(CC BY-NC-SA 2.0)



Figure 2
Ganzenmarkt
underground walkway,
Utrecht, NL.

© Anneke van Beek
(CC BY-NC-SA 2.0)



as in the case of level crossings for pedestrians. Examples of this requalification tactic are found in the cities of Birmingham, USA; North Lanarkshire, UK; Ringwood, AUS; Utrecht, NL [Figure 2] and Katowice, PL⁴. In these spaces, taking advantage of an urban acupuncture strategy, it was possible to transform, only through light and colour, urban spaces regarded as “non-places” into spaces designed to impress and, in this way, make their use more attractive.

An opening to the sky: artifices to make the underground space wider and more open.

Perhaps one of the best examples of mastery in the field of the technique of deceiving the senses and providing an opening to the sky in closed spaces is the painting made by Andrea Pozzo using the *quadratura* technique. One of its fundamental characteristics is to promote the continuity of the real architectural space in a fictitious space⁵ (Silva, 2020), through the painting of architecture on a perspective canvas, to create a structure or a set of these in replacement to the real one (Fillippi, 2002).

Just as in the 17th century, the perspective could be useful to the observer who entered a religious space to raise his spirit towards the heavens, in contemporary times, the use of artifices to bring the sky to the underground spaces, or at least the main element associated with it, natural light, can also have important effects on the viewer's psyche.

It has already been mentioned that the disconnection generated by the lack of natural light and the absence of openings to the outside is perceived as a disadvantage in the use of underground space. In addition, the absence of these elements can also generate not only high levels of stress but also, loss of control over the environment (Lee et al, 2016), which leads to a perception of insecurity and even a perception of poor air quality (Collins, 1975 cited in Carmordy & Sterling, 1987). Therefore, combating these effects with the generation of positive stimuli in the built environment may prove to be an unavoidable task in the design of underground spaces intended to have public use to counter-balance various negative psychological impacts that may affect users. Carmordy & Sterling (1987) argue that, among others, light is probably the main criterion to be considered in the design of underground structures.

Unlike the first generation of underground urban spaces, it is currently possible to observe that several contemporary projects have incorporated natural light, less intending to provide lighting for such areas (which could be easily done with the aid of passive systems of artificial lighting), and more to serve as a device to establish a relationship between open space and underground. In this context, natural light is intended to illusory reinforce the connectivity between these two worlds, below and above ground, regardless the fact that they are fundamentally different in their configurations and their connection remains very limited.

Examples of the use of this feature are London Canary Wharf Underground Station, where the transition between outside and

THE ILLUSION OF OPEN SPACE

Figure 3
Metro Station Canary
Wharf, Londres, UK

© Miguel Souza (cc BY-SA 4.0)

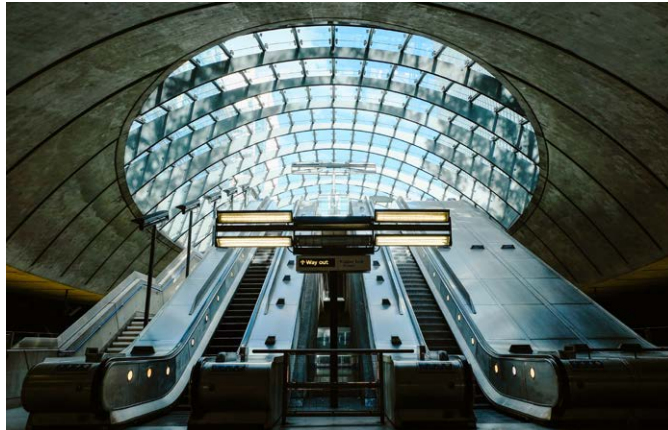


Figure 4
Metro Station
(Not Identified)

© Dan Asaki (cc BY-SA 4.0)



underground is smoothed by the ample natural lighting of the entrance hall [Figure 3], Blaak Station in Rotterdam, where light penetrates to the level of the boarding platform, contrasting with its closed environment and, even more broadly, in the renovation project of the Pont de Bondy Metro station in Paris where natural light bathes all levels of the building, reaching the boarding platforms with a play of light and perspective under an arrangement of mezzanines crowned by an immense *oculus*.

However, it is not always possible to make use of natural light and, particularly in deep underground spaces, the challenge in doing so could be technically and economically unfeasible. In these cases, authors (Samwell, 2003) point out that design solutions that use perspective as an instrument of expansion such as the construction in levels, mezzanines and different heights [Figure 4] can be valid to provide amplitude, while others even suggest a more radical form of space manipulation interior through the concept of construction in a “box within a box” arrangement in which it would be possible to provide the space with an “outside” view by playing with the perspective created between two distinct environments (Alkamede, 2003).

Conclusion

Lee et al. (2017) point out that the main challenge for any underground project in the future is to understand how to identify the psychological characteristics of this underground environment, relate them to its users and design such spaces taking such factors into account. In this work, it was possible to observe that, currently, a series of resources, both at a design and technological levels, are available to be used in the Project of spaces below ground to mitigate possible associations or negative perceptions regarding their use. The selection of the solution to be used may depend on the technical, economic or even social feasibility (in cases of the revitalization of degraded or underutilized spaces) that favour the choice on a case-by-case basis.

The repertoire of solutions is diversified and may correspond to low-tech resources that suggest an opening to the outside world through the insertion of illusory resources such as the “windows with views” adopted in some of the metro stations of the city of Stockholm, or simply through Project premises such as construction on different levels, dimensions, or gradients. Likewise, high-tech type resources may also be used. Benefiting from the properties and possibilities arising from cold light technology and, sometimes, from computerized control, these rely predominantly on advanced management of light and colour spectrum that provide, as we would have on the surface, a greater variation in brightness with a relevant contribution to the mitigation of stress levels, arising from the so-called “cave syndrome” (Fairhurst, 1976 cited in Hollon et al. 1980). All in all, these tools may promote greater comfort for the users of underground spaces and, as a result, contribute to the suitability of their use.

Notes

1. The study of human experience with the built environment has been carried out since the 60s, but only from the 2000s onwards has it expanded with the exploration of the role of the brain in this experience, which gave rise to the new field of knowledge called neuro-architecture.
2. The project is a work of the Skertzö agency, one of the pioneers in the use of video-mapping at the Festival of Lights in the city of Lyon.
3. The difficulty in dissipating the heat generated by incandescent lamps in underground environments partly explains this problem.
4. Respectively the Light Rails installation, the crossing near the Craiglinn roundabout, the Larissa crossing, the Ganzenmarkt tunnel and the Muzyczny tunnel.
5. Pozzo wrote a treatise on the subject, *Perspectiva Pictorum et Architectorum*, published in 1693.

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The materiality of 'materiality depiction'

ABSTRACT

Photography is one of the means that allow us to depict things on a stage or other scenic contexts. When used for this purpose, photography, in its condition of 'image', serves as a vehicle between the objects photographed in it (with their own materiality) and the objects that support the printing of the photograph (with a different materiality). This creates a triangular relationship to which one can ascribe expression as a significant part of the work. I will address some possibilities for this to happen, illustrating them with some of my own experiments as a set designer.

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THE MATERIALITY OF 'MATERIALITY DEPICTION'

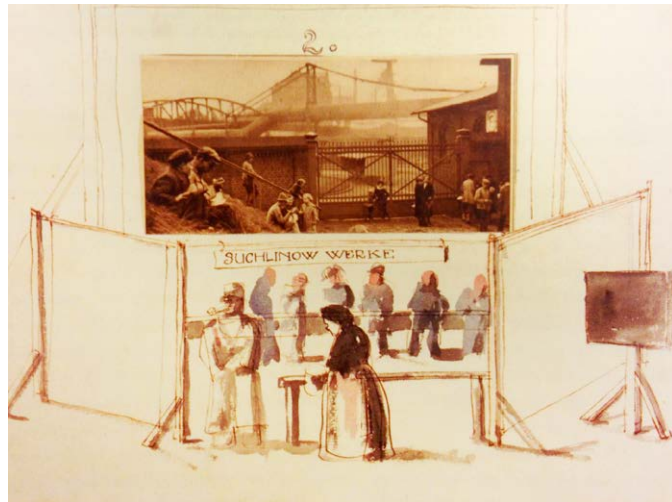
Unlike what happens in painting, the images placed on a stage enter a territory of tension between two- and three-dimensionality. This becomes particularly clear when trying to unify painted screens and three-dimensional elements, but even when the “scenarios” were limited to a painted backdrop, that backdrop depended on a three-dimensional space of representation. I believe this tension between two- and three-dimensionality is the distinguishing factor of what is considered to be *scenographic* in the western context of figurative representation prior to the experiments carried out by historical avant-garde movements.

This relationship between two- and three-dimensionality went through changes in the 20th century, namely with regard to the status of images on stage.

Caspar Neher was one of the pioneers parting with figurative representations that occupy the entire stage in favour of representations circumscribed to partial areas. Stages became similar to what is common in a cinema or photo studio [Figure 1], where scenarios don't occupy *the* space but instead are deployed *on* the space.

Figure 1

Caspar Neher
Desenho preparatório
para *A Mãe* de Bertold
Brecht, encenação de
Emil Burri, 1932.
Técnica mista



Neher does not dispense with the figuration typical of 19th century scenarios or the elements that compose it¹ (despite simplifying them); what he does in fact is adding new ones. Since what is intended is to *represent* while simultaneously *denouncing representation*, infrastructures, back surfaces and imperfections are exposed for all to see. Elements that are essential to achieve what is meant to be seen but are usually kept hidden are exposed, including the structures used to support walls, curtains or projection panels; the half-curtain shows the marks of its meticulous folding, similar to those of a starched and pressed shirt; projection surfaces remain on stage even when they're not being used for this purpose, like billboards without advertisement. All these elements serve, in this *way of doing*, as support for *images*.

The *media* have a body or depend on a body. To that extent, a relationship is always established between the content of the images — a virtual entity — and the material nature of the elements that support or convey that content. Against all theories that tend to separate these two elements, one can raise questions such as: “Where is it possible to use the scalpel in order to separate the image of a lake with water lilies from the materiality of the brushstrokes on the canvas when you are before a painting by Monet?”. It could be argued that this technical issue does not fall within the scope of the material vicissitudes of the medium, but rather within the scope of the artist’s own intentionality. That is certainly true, but in terms of the phenomenology involved in the reception of the work, the object of perception includes the image and the marks of its material support. Such marks are part of the totality of the object, regardless of whether their origin is intentional or circumstantial. Sometimes these marks are considered a problem, and that is why initiatives are taken such as restoring old paintings, but that is a matter of judging the value of the marks, not of the constitution of the perceptive act. It’s possible to construe a purely mental image based on the picture in front of us but the marks of the medium’s materiality will still be an intrinsic and inseparable part of the image.

In this sense, there are many artists who use the support of images itself as material for the construction of the work’s *nexus*. One could refer a work as fascinating as *The Back of a Picture*, by Cornelius Norbertus Gijsbrechts, dated 1670, as a remote precursor of this approach [Figure 2]. There we find both the virtuosity of the *trompe l’oeil* — a fight against the evidence of the support’s materiality and of the execution marks — and the barefaced (virtual) exhibition, not merely of the support, but of the backside of the support, the hidden side of the *hardware* of the painting on canvas². In a text about *trompe l’oeil*, Sybille Ebert-Schifferer wrote:

It is not accidental that *chantourné trompe l’oeils* so often include allusions to the painter’s profession and the process of making pictures, for their actual content is the skeptical question about the ontological status of painting: vision or object?³

These observations could be about some of Neher’s scenarios: the scenographer’s profession, the process of making scenarios, and the question “vision or object?”.

There are many other examples that could be mentioned involving the adoption of the *support of the representation* as the theme for works of art. In some cases, the work is emptied of its usual content so that only the support is presented. In other cases, the support is manipulated, or sculptured, as happens with the perforations and cuts that Lucio Fontana makes in monochromatic canvases (which imply the status of the canvas in painting); in the



Figure 2
The Back of a Picture,
Cornelius Norbertus
Gijsbrechts, 1670

circles cut by Dieter Roth on successive pages of books with images; or in the cuts that Titus Kaphar makes in portraits.

On stage, the objectification of images is more complex. In addition to the relationship between image and support, there is also the relationship I referred to earlier between images and the stage's three-dimensional condition. We are then faced with three types of three-dimensionality: (1) the virtual three-dimensionality of what is represented in the images; (2) the three-dimensionality of the objects that serve as support to the images; and (3) the three-dimensionality of the stage's space.

However, even more than in stage design⁴, the most relevant experiments regarding this theme have occurred in the field of photography. There are multiple examples of photographers who have transcended the internal scope of object-photography in favour of experiments where that object acquires a sculptural dimension and interacts with the space where it is installed.

One of the first steps taken to recognize the three-dimensionalization of pictures as the thematic scope of photography was the organization, by Peter C. Bunnell, of the exhibition *Photography into Sculpture*, open to the public at MoMA from April 5 to July 8, 1970. In the press release, Bunnell wrote:

[...] these photographer/sculptors are seeking a new intricacy of meaning analogous to the complexity of our senses. They are moving from internal meaning or iconography — of sex, the environment, war — to a visual duality in which materials are also incorporated as content and at the same time are used as a way of conceiving actual space.⁵

In 2016, Mary Statzer edited a book about this exhibition, entitled *The Photographic Object 1970*. In the book's introduction, she identifies three basic elements in these photographic practices:

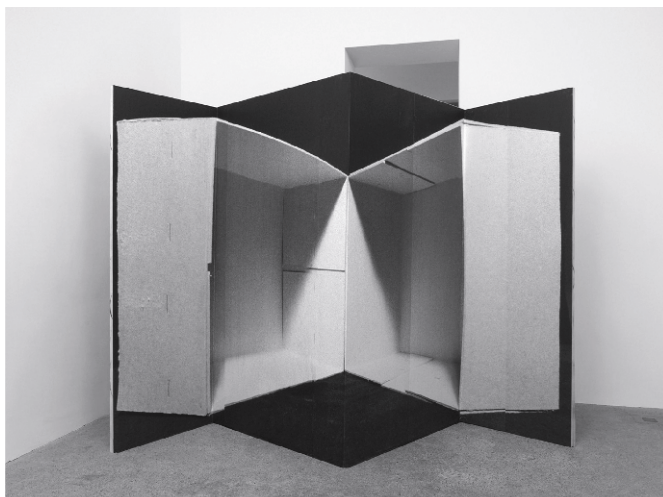
[...] the interplay between the image or images, the materials, and the sculptural form.⁶

The “post-internet art” category is recent and still quite unstable, but it seems clear that it allows for experiments in which the universe of digital images is balanced by the materiality of the supports used to present these images. These practices are aimed at expanding the scope of *photography* into the scope of *photograph-icness*, which was already present in *Photography into Sculpture* but, given the current context of progressive digitalization of images, they acquire an added meaning: they establish a link between the increasingly distant spheres of the *virtual* and the *material*. They connect Photoshop to handicraft.

Focusing specifically on space representation techniques — the most traditional function of scenarios — I would like to mention

Figures 3 & 4

Spanische Wand: Folding Screen, 2012, Alexandra Leykauf



two photographers who, although not from the time of Bunnell's exhibition, or mentioned in Statzer's book, have developed works addressing the dialogue between two- and three-dimensionality, or between image and object: Alexandra Leykauf and Alain Paiment.

In *Spanische Wand* (Folding Screen), from 2012, Leykauf printed the image of two cardboard boxes on a folding screen so that the vertical edges of the represented object and the supporting object overlap. The perspectival effect becomes not only a deviation from canonical illusionism, but also different according to the point of observation [Figure 3 & 4]. In a series of works entitled *Amphitéâtres* (1986–93), Paiment gives a polyhedral form to photographs of amphitheatres which he presents, sometimes as volumes, sometimes as polyhedral nets [Figure 5 & 6]. In both cases, a dialogue takes place between the perspective of the images and

Figure 5
Grand Amphithéâtre,
Alain Paiement, 1988

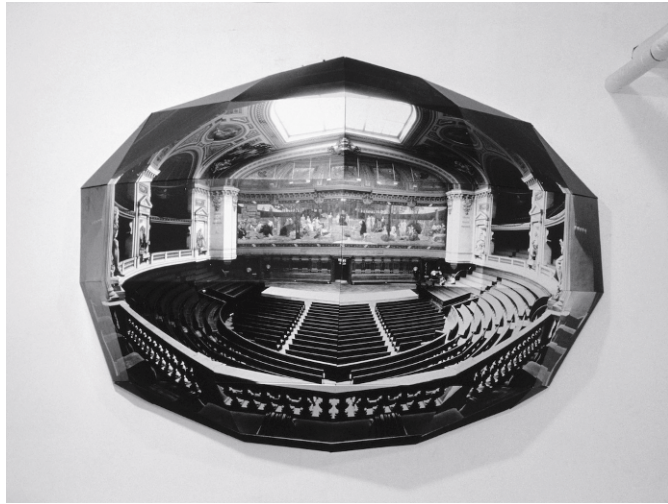
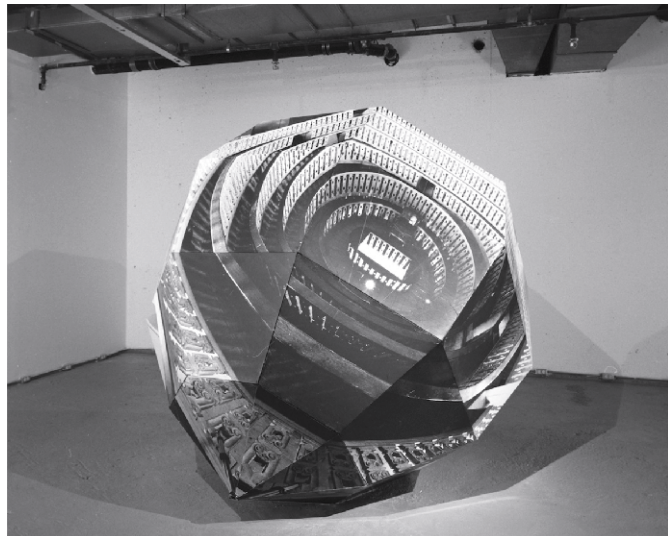


Figure 6
Anatomique,
Alain Paiement, 1990



the volumes that support them. Images have the ability to suggest the depth of what they represent, while the volumetric characteristics of the support interact with this illusion, exaggerating or contradicting it. In both cases, the visual potency of the result comes from the simultaneity between the vertigo of the perspectival illusion and the breaking thereof. In this duality, these works can be compared with Neher's stage designs.

Perspective has been rendered unnatural by time: today, a Renaissance painting does not seem real; it seems more of an exercise in descriptive geometry, a fact that is made particularly evident by the pavement's stereotomy — the quintessential unifying element of represented space. But perspective remains deeply rooted in our visual culture; just consider, for example, the number of theatre rooms that follow the "Italian" model. And, to that extent, current perspective play is not as illusionist as much as it is cultural

(and ludic). These artists operate within the *cultural* mechanisms of vision or of the construction of illusion.

To conclude, I would like to return to the specificity of the stage, where the images coexist with an *action* — the action of the show — of which they are an integral part. They live in the show, with the show, and are seen only in that particular circumstance, in that limited time circumscribed by the duration of action. They are as ephemeral in their condition of part of the show as the show itself. After that, they become once again isolated parts of the machine to which they belong and in which they fulfil their purpose.

When set into the scenic context, the image returns to the type of existence of the “here and now of the work of art — its unique existence in the place where it is found”⁷ that Benjamin associates to the aura. This happens not only because of its nature as an image, but because it belongs to the event, which is temporally circumscribed.

Notes

1. Bert O. States states that, in Brecht's shows, “[...] it is not the stage illusion that is undercut, or even the illusion that the stage represents a certain kind of “Nature”; what is undercut is simply the conventional system of current theater.” Bert O. States, *Great Reckonings in Little Rooms: On the Phenomenology of Theater*, Berkeley / Los Angeles / London: University of California Press (1987), p. 94.
2. Victor Stoichita states that “the object of this painting is the painting as an object”. Victor I. Stoichita, *The Self-Aware Image: An Insight into Early Modern Meta-Painting*, transl. Anne-Marie Glasheen, Cambridge: The MIT Press, 1997, p. 277.
3. Sybille Ebert-Schifferer, “Trompe l’Oeil: The Underestimated Trick”, in *Deceptions and Illusions: Five Centuries of Trompe l’Oeil Painting*, Washington: National Gallery of Art (2002), p. 33.
4. The reflection on stage design has been dominated (1) by the return to an

idea of *immersion* close to the enchantment that was sought by 19th century theatre, today through the use of new technologies, (2) by subservience to a utilitarian idea of theatre as a social service and (3) by the dissolution of the idea of “scenography”, or even “performance”, in favour of the “experience” in which the viewer's body is placed at the centre of the work.

5. Peter Bunnell, quoted in: Mary Statzer, “Introduction”, in Mary Statzer (ed.), *The Photographic Object 1970*, Oakland: University of California Press (2016), p. 6.
6. Mary Statzer, “Introduction”, in Mary Statzer (ed.), *The Photographic Object 1970*, Oakland: University of California Press (2016), p. 6.
7. Walter Benjamin, “A Obra de Arte na Época da sua Possibilidade de Reprodução Técnica”, in *A Modernidade*, transl. João Barrento, Lisbon: Assírio e Alvim (2006), p. 210.

Politics



Gil Madeira,
Sem título, 2021
Dyes, chrome paint and
polyurethane on glass
50 x 150 cm



Public Situations: Memory and Distancing

ABSTRACT

Public Situations: Memory and Distancing is based on the analysis of recent poetic practices originated within the confluence of architecture, urban planning, cinema and projection mapping studies, through which emergent artistic interventions produce tension between existing relations among memory, place, constructed space, territorial identity and experience.

As the work problematizes the visible — urban form — and the invisible — technical and psychological projection — it is meant to implicate the public to the urban context through an amplification of perspectives in spatial experience.

*
PPGAV/UFRGS

Introduction

This study is realized during the Covid-19 pandemic in a context of social distancing. Bourriaud,¹ when dealing with the creation and appropriation of meaning in social construction, stipulates that the “domestic space represents not a site of withdrawal into the self, but a site of confrontation between social scripts and private desires, between received images and projected images. It is a space of projection” (Bourriaud 2005, 65). As such, projections refer to image displacements.

This idea appears as a metaphor in one of the most important texts in the Western world, *Plato’s Republic*, which contains the *Myth of the Cave*,² an analogy to a hermetic world populated by prejudice, as opposed to an external world, of knowledge. In everyday experience, on full moon nights, the human eye is able to see the projection of sunlight onto the lunar surface. Complementarily, from the flame of a candle, where there is an object between light and screen, an enlargement of the forms in their projected silhouettes is conformed through the projection of light. This magnification, which can generate deformations, is geometrically governed, so that the greater the distance between the light source and the screen, the greater the magnitude of the projected image, in a directly proportional relationship.

Projective drawing methods are based on projections. Gaspar Monge³’s *epure*, which allows the representation of three-dimensional objects in a two-dimensional plane, is based on projections. With an observer positioned at an abstract point at infinity, it becomes possible to accurately determine measurements, angles, areas and volumes in their true magnitudes. Isometric perspective is a system of representation of space that allows the arbitrary choice of angles drawn from a base reference line, from which the drawing is structured by maintaining the vertical quantities as parallel line segments, whilst the areas of the horizontal surfaces are distorted. In the military perspective code, the size of the base area of the drawn objects is maintained, while allowing for the distortion of the lateral surfaces. In descriptive geometry, there is the possibility of creating infinite conical perspectives, mathematically generated from a three-dimensional object described in an *epure*, from the creation of imaginary reference planes and points (cameras) designed on the paper plane.

Patrick de Haas, about the relationships at play between “project” and “projection”, refers to the amount of conical expansion of the luminous rays into space as a metaphor for imaginary strings that connects the reality of today to that

transformed of tomorrow. The author refers to projection webs, freely tensioned towards the future.

The word *Project* is defined as “action to launch forward, to extend”. Projective drawing methods are based on projections. Gaspar Monge’s orthogonal projection system, that allows for the representation of three-dimensional objects on a two-dimensional plane, such as blueprints and elevations, are based in a projection system.

Going back to the renaissance, one reaches the conical perspective design conceived by the projection of external light in a darkroom. Vision, as it is known, is based on the same physical principle as the dark chamber, in that it is an optical projection of light that enters the eye, conical, from the outside environment through the iris until it meets the retina as a shield or screen. The retina is a tissue physiologically in direct contact with the brain, if by anatomical observation it could not be said that the optic nerve is inside the brain itself.

Conic perspective drawings allow one, two, or three vanishing points to structure the representation of three-dimensional spaces and objects in the two-dimensional plane of the paper. In the conic perspective method, the vanishing point is an abstract point located at infinity, from which descriptive lines of spaces and objects are conducted. Human ingenuity has already preferred the construction of conical perspectives of only one vanishing point, in which there is usually a frontal (imaginary) plane and all the lines perpendicular to it escape to a point, or from that point. It was the predominant narrative choice for the construction of images during the Renaissance and the Enlightenment historical periods; contexts in which it was important to establish a single viewpoint, contemporaneous with absolutist regimes. The method of two vanishing points lends itself, differently, to describing the internal spaces of environments, or a set of solids whose visual predominance is horizontal, and was a modernist preference for representation. Such predominant choice can be interpreted as the philosophical surpassing of its previous era. Drawing with three or more vanishing points, in turn, is an advent that later became popular, in the language of comics and cinema, in a manner consonant with the representation of skyscrapers and the framing in *contraplongée*. In this method, there are two vanishing points linked to the plane of the horizon, articulated to a third, located in a plane at perpendicular infinity of vertical orientation.

Philosophically, it is my understanding that the singular vanishing point system can be interpreted as representing a single, hegemonic power and path; two-vanishing points refer to dialectical materialism and the encounter between two subjects, two paths, two spaces, two faces; finally, the system with three-vanishing points can be interpreted as a method that comprises two social differences in relation to a third, in a concertation

of articulated subjectivities linked to a superstructure. Today, representation systems are being developed in which one may draw directly in a three-dimensional space, in 360° surface virtual environments. Such a method seems to me to be consistent with the contemporaneity ethos conformed of multiple relevant and illusory points-of-view (or vanishing points), according to the observation's orientation, contextualized. A web of multifocal discourses, capable of absorbing the diversity of gazes that build the collective. Based on this knowledge, I understand that perspective in drawing is always a mental projection, used as a resource to read and describe the world.

In the scope of experience, the gaze facing a path on the ground is directed to a blurring point in infinity, if there are no obstacles or barriers blocking the view. Even if informally materialized by the trail of human or animal footsteps, on the raw ground, the path insinuates itself in a conical perception of the image. In the vision of paved streets, designed, straight or not, there is the condition of looking towards and from the vanishing point. It is the conical refraction that the eye produces, like a lens, in vision that the drawing mimics. The vanishing point, located in a dimension alien to the scale of the body in space, on a plane as far away as infinity, will always correspond to a situation transcending the current one: it refers to a future, to another place and towards a displacement.

In the same line of thought, “perspective”, in Russian, is written “проспект”, which in the Latin alphabet would be “prospect” which means “avenue”. “Prospect” also refers to the future. Thus, we can assume that the “avenue” presupposes a shift in vision, as well as a prospect. Haas deals with the projective space as a perspective space (Haas, 1998, p. 123), by bringing the resident association in the term “sketch” (“esquisse” in French) from the Italian “schizzare”, which means “spouting, blasting forward”. The author also references, in Duchamp’s work, the projection method as a means of thinking about relationships through his descriptions in drawing, without the need to reach the vanishing point, the horizon, which is always unreachable. The author says that “if it is in the region animated by the ‘almost possible today’ that the future can open up, it is that, between the ‘realistic’ project and the ‘utopian’ projection, the world as it is has not yet imposed its choice” (Haas 1998, 123).⁴ As such, there is, in imaginative design thinking, a social connection between times and spaces generated by the technique. Haas references in three of the most active artists of the avant-garde movements of the early 20th century, whose practices are considered from the pre-cinema era, Theo Van Doesburg⁵, Moholy-Nagy⁶ and El Lissitzky⁷, the interest in projection residing in its association with the notion of project. Haas says that abstract art is not content with recording contemporary problems, but projects a desirable future order (Haas, 1998, p. 122), an imagined world, beyond the world as it is.



Figure 1
 Frame record of the video
 installation *Esplanada*
 (2020). Full work accessible
 at <https://liviakoeche.cargo.site/Esplanada>.
 Author's file.

Not as a fictional fantasy, but as a vision project. Perspectives can be thought of as a set of devices in the language of manifesting worldviews. Conceived as discourses, they metaphorize clashing approaches for the description and establishment of the real. The construction of shapes in two-dimensional representation systems is absolutely different from that developed in virtual simulation environments. Some modernists, as I understand it to be the case of the artists of suprematism, worked on distorting perspectives, intending to precisely tension the normative arrangement of these constructions and thus reveal them in their tendency to be inexact, to reveal human desire. Differently, the three-dimensional virtual simulations of objects and spaces developed by contemporary programming allow the acceleration not only of the projected shape development process, but also relegate constructive cognition to the algorithm.

Machines, in Mbembe's thought⁸, not only perform tasks, but generate complex behaviors in the computational reproduction of reason. The author identifies, in the contemporary technological productive regime, that reason is no longer the exclusive domain of the human species, immersed in a reality built through statistics, metadata and behavior modeling, in a way that passions and, especially, a perverse desire, take over the place of reason as a human domain (Mbembe 2020). In the context of the current pandemic, we humans are all becoming gradually and progressively more audiovisual, miniaturized into technological bodies.

When designing a project, images are scaled down. In the projection of a video, the images are enlarged, subject to distortion and loss of sharpness. The sense of the project, figuratively, as seen before itself, is an operation of internal refiguration in a communication of a mental projection, when passing from a mechanical and geometric sense to a luminous sense, which starts to acquire a mental, temporalized sense and for which it would be the idea, in the transport of consciousness towards a future. In this reasoning, the projection would already be in the order of a continuity of the project. The displacement, both of light and consciousness, present in the projection processes are composed of both material and immaterial elements, internal and external to the human, with subjective and environmental implications.

Conclusion

As I understand it, the cities in which we live were dreamed, desired and so designed by the people who preceded the now. One might think, at the same time, of recent ancestry as the group of modern workers who carried out the formation of urban situations that today are possible to share — and undergo.

Projections are image displacements. One understands the shadow through observation of light projection, which generates and amplifies images. Likewise, in psychological processes, a subjective projection is understood as an overlaying of constructed, preconceived ideas about the world, which operates autonomously, as placed onto the world, blurring its perception into sheer interpretation. Technology, as a mediator of our relationship with reality, might also operate as a shapeshifting filter.

Notes

1. Nicolas Bourriaud (1965–) is a French curator and art critic. In his 2002 book *Post-Production-Culture As Screenplay: How Art Reprograms the World*, he uses the vocabulary related to video editing operations to draw a parallel with the phenomena that govern the construction of contemporary forms of culture.
2. In this allegorical fable, a group of people were trapped in a cave since childhood, in chains. On the walls of the cave, shadows of moving shapes from the outside world were projected, so that they towered and appeared to be tenebrous monsters. An imperfect copy of reality, believed to be the truth of knowledge. From these conditions, one of the prisoners manages to break free and comes into contact with the outside world. From there, he would have two options: return to the cave and free the other prisoners, or live his freedom in solitude. The consequence of the first option could result in being labeled disruptive and attacked, but the author believes that it would be a necessary attitude, as it is the fairest thing to do.
3. Gaspar Monge (1746–1818) was a French mathematician, creator of descriptive geometry as a mathematical basis for technical drawing and father of differential geometry. He served during the French Revolution as Minister of the Navy and was involved in reforming the French educational system. His method was once considered a state secret.
4. Author's translation. In the original: "Si c'est bien dans la région animée par «l'à-peu-près du toujours possible» que l'avenir peut s'ouvrir, c'est que, entre le projet «réaliste» et la projection «utopique», le monde tel qu'il est n'a pas encore imposé son choix..."
5. Theo Van Doesburg (1883–1931) was a Dutch artist, graphic designer, poet and architect associated with Dadaism, concretism and neoplasticism. One of the founders of De Stijl (later split with the orthodox ideals of Mondriaan), he exerted a great influence on the Bauhaus.
6. László Moholy-Nagy (1895–1946) was a Hungarian painter, photographer and audiovisual poet, professor at the Bauhaus, greatly influenced by constructivism and a great idealizer of the integration of technology and industry with the arts.
7. Lazar Markovich Lissitzky (1890–1941) was a Russian Jewish artist, designer, photographer, typographer and architect. He was a relevant figure in the formation of suprematism, together with Malevich, exerting a great influence on the school of Bauhaus.
8. Achille Mbembe (1957–) is a Cameroonian philosopher and political historian, dedicated to investigating the history of Africa and theoretically structuring post-colonialism in the field of social and political sciences. He proposes a work of acceptance and transcendence of difference, instead of proposing a return to an original, marginal and non-metropolitan status. Achille Mbembe, in *Necropolitics* (2018), will expand the ideas developed by Agamben to propose a decolonial critique of the management of death in what he will call "the modern terror", original from the processes of colonization and slavery, prior to the Industrial Revolution. In his thought, he deals with the political project of administration in which power is about killing or letting die (in opposition to Foucault's biopower, centered on the binomial killing or letting live), in which stereotypes work as fictions for the symbolic legitimization of genocide.

MEMORY AND DISTANCING

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@#D:

Other Notes on Rendering and Augmentation

ABSTRACT

The present contribution utilizes *rendering* and *augmentation* as wide-reaching, socio-cultural concepts. It departs from visual culture and is interested in the material realities that concern the contemporary, digitally-networked society. Some examples are drawn from new technologies for image production and discussed through a body-space-positive post-capitalist optic.

This work can be seen as a companion paper to “@#D: Face-Filters, Satisfying Videos and Socio-spatial Justice”, published at “xCoAx 2021, 9th Conference on Computation, Communication, Aesthetics & X”.

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Introduction

The spirit of current time and the struggle to concretize desirable futures has been incredibly pictured by the template for Alternate Realities 3D Community Challenge (2021), one of the many prompted by Youtube user *pwnisher*. Under a dramatic lighting, we see a human-like character walking effortfully from left to right of the scene — a decaying urban environment. Carrying an oversized, heavy-looking backpack, they go towards the tip of a collapsed wooden bridge but show no sign of stopping (either from not seeing the edge or hopelessness). This animation template was made open to reinterpretation and bootlegged by the 2400 artists that followed the challenge, where mostly dystopian renders meticulously echo each other and create the mirror reality of a society's extensive technological intervention marching towards climate catastrophe.

The recent development of machine learning algorithms has created a spreading discourse that states “it’s a great time to be alive”, which refers to witnessing human technology overcoming many paradigms of artificial intelligence, an imagined threshold that has lasted for almost the same time as computation itself. While rigorously such intelligence is still rudimentary, and specialists have argued that it is not time to give decision-making powers to these systems, we acknowledge here that its spread to mainstream culture, both as media/language artefact and materially intervening in economics, has been increasingly forced onto society and created increasing injustice. It has been done so by GAFA — and fractally other — tax-evading, capital-globalized, off-shoring billionaire companies, which have successfully escaped the constraints of nation-states and bypassed any scale of regulatory policies.

Beyond the surface-level imagery that AI can create, AI-powered Platform Capitalism has established, following the 2008 financial crisis, a new market. One that takes the neoliberal agenda to full-potential through spatial control and reconfiguration, privatized governance (neo-feudalism) and tactical dismantling of workers' rights. As recently put by political writer and activist George Monbiot on Double Down News, there's a paradox-metaphorical evil ongoing. With socio-spatial conditions becoming ever more unjust in workplaces and urban environments, seeing intensification of control via location media technology and computer vision, we witness the ongoing precarization of the global environment becoming a *facade* justification for a billionaires' *space* race.

The 3D renders of space colonies presented by Jeff Bezos in their keynotes are nothing more than the least scientifically rigorous *fin de siècle* Hollywood pastiches. In every level, the inequalities of the capital-colonial market and the globalized exploitation scheme engineered by these companies are the very essence of the destruction of the planet and such epistemological distortion must be strongly contested.

In the following notes, different digital technologies are addressed in encapsulated ways, compiling somehow freely further insights that did not fit the linear argumentation followed in the aforementioned paper. This effort aims to always expand and compress, to cluster understandable tips to navigate realities within computational imagery, augmented spaces and the algorithmically changing capitalist lifeworld.

Cultural Slimeware

Since 2017, the operating system Windows has introduced 3D functions to one of the most iconic softwares for digital image production, Microsoft Paint, together with a short-lived repository for objects <Remix3D.com> and 3D Viewer. On 4th July 2018, for the release of ARKit 2, Apple and Lego partnered for a demo that showed users using interactive overlays and dynamic animations to the well-known constructive blocks — a feature formerly powered only by users' imaginations — with the use of smartphones and tablets.

Among other examples that drive the ascendant of 3D, namely the latest updates of Blender, Unreal Engine and the release of Spline, it seems symbolic that a toy like Lego blocks and the rather primitive Paint, both known for being kids' first contact with construction and image-making respectively, have followed the new super-smooth rendering normative. On one side, that bitmap framework has moved towards three-dimensionality and on the other the somatic, physical construction blocks have been pixelated — a hybridization between material culture and “cultural softwares” (Manovich, 2011). Neither software or hardware are able to answer for their acts, and technology becomes increasingly plasmatic. The opacity of hardware has become more and more controlled, concealed when needed, leaving those in use of digital technology in a non-newtonian fluid.

Such hybridization is carried out today by “atoms' of culture” (Ibid.) in many but two distinct streams that utilize Generative Adversarial Networks: (1) One acting on the surface of images, being able to create and interact with two-dimensional synthetic images; and (2) on the understanding and synthesis of three-dimensional objects and space.

On the first, the results created through “traditional” GAN methods show that aesthetics soon won't be able to define the frontiers of truthful imagery. For example, Nvidia Canvas and other image-to-image generators are able to generate realistic landscape-like images based on outline area drawings, a case showing the overly-human habit of simplifying nature into their categories (in this case: “materials” and “styles”). Projects such as *thispersondoesnotexist.com*, by Babak Fakhmzadeh, Unreal Engine's *Metahumans*, *Alias-Free GAN*, also powered by Nvidia, have shown that not only we are at the threshold of indiscernibility, but these methods will become ever more used.

Machine-learning datasets when composed of photographs are able to emulate photos or videos, and synthetically generate a sort of image that is “not real”, a photo not taken. These aspects, however, are not new, since photoshopped images and *deepfakes* are already with us for some time, and so is 3D rendering. What is new here is the ability to automate and feedback such dynamics. The last couple of years showed how our ability to engage with these technologies will depend on who’s using them and on the cultural relevance attached to images as representations of truth.

Secondly, we see how softwares such as Epic Game’s Reality Capture have come to achieve impressing photogrammetric results, and GAN-based applications to 3D¹ are at a rapid pace. These demonstrate that the pin-pointing and sorting of all physical environments into data streams is eminent, and such understanding has numerous applications. Because Platform Capitalism needs to know its nodes, its point-cloud, users and space interacting are the very resources for its extractivist functioning, technologies that allow this code/spaces to work become the field of action for disruptive emancipatory practices.

The paradigm shift for images and space have come to surpass their aesthetic to focus on the increasing operativeness, their relevance in continuous analysis flows. There’s a sense of truth that is in constant shift when artificial intelligence is taken as a paramount, all-mighty place-making apparatus. When cultural artefacts as images and spaces are not an end in themselves, but an input for ongoing evaluation, the extensively exposed biases embedded in the datasets driving such technologies create a potential for domination, as their poiesis hastens the reproduction of certain realities over others. While culture itself is the *milieu* in which things come into being and are buried for archeological futures, cultural automation is a process of erasure.

Render Outside the Screen

The all-out internet condition is not an interface
but an environment.

— Hito Steyerl, *Too Much World: Is the Internet Dead?*

Frequently put as a portal, the screen that gives access to other worlds through the internet, has fallen out of the stationary. Portals are modernistic concepts, they ornament the divide between spaces and conceal until an epic *revealing*. Screens-and-spaces on their contemporaneity have morphed their artistry into a more fitting *experience vocabulary*; a spatial conceptualization that is constantly revealing and changing, and has come to empower their privatizing *ethos*.

Digitization and its following Techno-Scientific-Informational Revolution (Santos 1992) pushed an urbanization process of unbound extension, of psycho-spatial character, where digital computation

sets the structure to social logics and endure as an invisible basis where urban activities take place, where images emerge. Based on Frieder Nake (2016) and Groys (2018), it is possible to see a constant tension between what the first calls *surfaces* and *subfaces* of an image. Subfaces, the code at work, the computation necessary to bring a digital artefact into existence are therefore, the abstracted image, which follows specific compression standards and enframing based on where they will be vehicled.

The technical limitations of screens, as rather flat and fragile surfaces, makes them not quite the perfect object for ubiquity. Either through miniaturization or transparency, projects like Google Glass and drone light shows have shown that the capturing nature of screens needs to dematerialize or be less obtrusive in order to achieve their full potential. In “The Poetics of Augmented Space” (2005), Lev Manovich has laid ground for observing this paradigm shift. Authors like Steyerl and Boris Groys constantly picture this spatial quality of what Henry Jenkins calls “Convergence Culture” (2006), where the possibility of cultural objects to flow between delivery technologies is what defines their material intervention. It’s not the bigger screen that matters but the distributed effect embedded in traveling media and their pocket-sized support. The surface then, is that which becomes practice, it is the active status of data playback. It is a topological subject that is produced by the relationships between entities and not their physical distance; they are dynamically socialized images, services and places.

As observed, the infrastructural level in which socioeconomics takes place is ever more privatized, centered in so-called platforms. Their media circuit keeps goods, services and information to payers’ access while providing minor augmentations to regular users. The bourgeois ownership dynamics continue to affect physical space as they internally restructure their subface, as strategic knowledge to govern or to sell. The dyad *rendering* and *augmentation* must then be addressed and critiqued from their subfaces, their world-making frameworks, overcoming the “danger of always dealing only with its effects rather than the causes: the output that appears on a computer screen rather than the programs and social cultures that produce these outputs.” (Manovich, 2011)

Reality Shifting

In our dreams (writes Coleridge) images represent the sensations we think they cause; we do not feel horror because we are threatened by a sphinx; we dream a sphinx in order to explain the horror we feel.

— Jorge Luis Borges, *Dreamtigers*

As said, to render goes beyond creating a 2D image or surface, but to dynamically cross multidimensional data to represent a sensorial spectrum (that exceeds vision). Much like dreams, they gather a limited set of information to translate meaningful messages to an evolving story, which can be more or less realistic or surrealistic.

Like the one dreamt by English poet Samuel Taylor Coleridge, it seems that dreams carry a set of motifs, symbols that are culturally shared and create on one hand streamlined narratives and on the other, unfolding concurring interpretations. For Borges, dreaming was the ultimate act of writing, and vice-versa, the possibility to story-tell your way through a different reality. However, there are always critical thresholds for both human imagination and computer-generated imagery. A certain subject's mind carries information and is inscribed in limits of perception, experience and exposure to symbols — their metadata? — whereas neural-networked systems tend to access a varied set of inputs, coming from anywhere on the internet, to “deep-dream” a deterritorialized story.

The marketplaces and social media platforms that steer the data which their user access can shape the “digital unconscious” (Stalder and Becker 2021 et al.), a subjectivity machine for desire-making, a semiotic playground for market corporations and their insurance backdrop. The infinitely editable nature of networked media, their deeply ingrained customization, defines not only consumption decisions but the limits of our dreams and political thresholds, they render the vocabulary for our discussions.

That said, it is time to drift into a specific case that intersects those ideas: Reality Shifting. Somewhere in the last quarter of 2020, TikTok users have started and rapidly collectivized something that tangents self-hypnosis, lucid dreaming or meditation. Spread among different techniques, it consists of projecting the consciousnesses into alternate realities. If it wasn't for the concomitant COVID-19 “reality”, such a religious/spiritually-infused trend would fit oddly with the other topics of the young Zoom Generation.

Although altered states of consciousness have been around as far back as we know, each generation with their chemical or media augmentations, “Shifting” has attracted billions of interested users, which heavily debate their rules, methods and occasionally claim its fakeness. Arguing that it is an entirely new concept and “it is real”, enthusiasts, influencers and followers are caught in overstacking positions, dismissal, gate-keeping and over-promising stands that resemble the discourse of well-known pyramid schemes.

To go back to Borges, there's some part of dreaming in it, and it is smooth-edged here how it works between escapism and creative story-telling, how beneficial or alienating the *hikikomori*-recalling trend is. The world events that encompass this subject, the collective existential crisis provided by the pandemic and the growing manifestations of planetary destruction have turned symptomatic as a rendering problem, into visualizing a fictional reality that is more pleasant.

With the increasing impact of the infosphere in the constructed environment, the young generation are struggling with creating mental space for cure and attention, and to engage with mental health in bodily terms. In the wake of novel contours to physicality, and revoked the active participation in collective social spaces, society faces a problem of prefiguration and deepening crisis in consensus. One that goes beyond marketplace algorithms, but a continuous corporate-political deception, a distortion of truth by enforcement of objective realities.

How to Render a Cloud

It's July 2021, the world is witnessing natural catastrophes such as the storms in Bangladesh and India, floods in Germany and Belgium, the heat dome in North America, we see headlines of another Dubai's successful "Cloud Seeding" — electro-shocked drone-induced rain.

First introduced in the 1940s, used in the UAE since 2017, such technology has never met with the concerns with environmental balance and it is very cost- and resource-ineffective. A quick research finds that Prince William and Kate Middleton also used cloud seeding reversely, to keep their wedding ceremony from the rainy English weather and China to keep the 2008 Beijing Olympics Ceremonies rain-free.

Interestingly, rendering a cloud is a remarkably challenging task in computer graphics. Given their intricate and shifting shapes, the molecule-level interaction with light, and symbolic atmospheric character, clouds remain usually more depicted compositing 2D animations than actually modeled in order to save processing power. Although it is clear that many attempts arrive at indistinguishable results, it is possible to see this subject as a matter of "wording", as a way of seeing that is imposed onto the cloud. Such narrowing is taken here as a *modus operandi* of capitalist enterprises; imprinting language over-simplification into complex natural order.

Observing music and fashion, we see that definitions of styles, genres and subcultures tend to become ever more branching, semiotic signs are not as hard-edged as they used to be. For Berardi (2012), the reorganization of the mechanic-industrial work to semiotic production, that of cognitive work, results in the alienation of the interlocutors, a shift in the collective capacity to understand things, specially money, language and time (Ibid. p. 83). In *Semioinflation*, meaning is ever more scarce while signs and symbols are over-abundant (Ibid. p. 96). As well known, inflation and crises are also levers for politic-economic change, often by the capitalist share that holds financial security resources and political influence to hold their textolatry. In the case of semiotics, it can be argued that such inflation becomes a strong apparatus for recoding culture, as the fluctuating meaning allows for increased influence of the

cultural stakeholders. “What happens when ‘clouds’ becomes synonym for acid rain?”

The rip-off of the word that gives name to the biggest rainforest ecosystem by the inhuman planet-depleting company Amazon(ia) proves the point, shows the bare-faced dark epistemology of such an agenda. It represents what Vítor Grilo Silva has called an “ontological extortion” (2021) and I’d add: a “cosmological colonization”. We call here then for the importance of recognizing these apparatuses and suppressing totalizing knowledge, for a political philosophy that does not allow dominant discourse to sublimate into reality, but allows a multiplicity of realities to shape emancipatory politics.

Notes

1. See Wu, Zhang, et al. 2016 and others generously compiled by Yuxuan Zhang on Github (/timzhang642)

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Reality as composition and consensus. Moiré patterns and circumstantial meanings

ABSTRACT

This nonlinear article establishes a speculative relation between moiré patterns and the notion of *meaning*, observed through the fields of Linguistics, Gender Studies and Art Theory, to further expose some of the ways through which Europe's colonial project demonized non-European cultures, subjects, practices and realities.

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Independent researcher

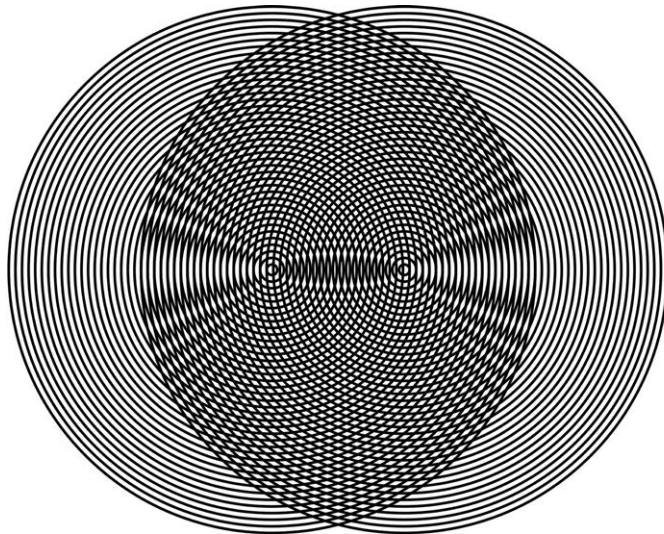
Moiré

For her 2019 MET Gala after-party outfit, Kim Kardashian wore a latex Mugler dress printed with a white and light-blue moiré pattern. Given that *Camp: Notes on Fashion* was the theme of the Gala that year, this Mugler dress is particularly interesting because it brings out the connection between Camp and its royalty aesthetic influences. Part of the theatricality of Camp poignantly draws from monarchical salon display and performativity.

Kim's dress is actually revisiting a particular kind of fabric popular in the 18th and 19th centuries known as *moiré*, whose etymology descends from the French word *moirer*, “to produce a watered textile by weaving or pressing”, (and previously from the Arabic *mukhayyar*, “chosen”). The characteristic texture of the moiré fabric is the result of a mechanical process which generates its distinct watery appearance. Garments produced with moiré textiles were often used by the upper class to attend special celebrations and events.

The word *moiré*, having its meaning attributed to the denomination of a textile, is in turn the eponymous source of the same word used in the context of mathematics and physics. In other words, *moiré* is also used to name patterns whose visual similarities between the moiré textile made them acquire that name.

Figure 1
Moiré patterns



Moiré patterns [Figure 1] are large-scale interference patterns that result from the overlapping of two similar opaque ruled patterns with transparent gaps. The slight difference between the patterns, a displacement or rotation between them, is what causes the moiré pattern to appear.

Recurrent moiré patterns happen for instance when someone wears a striped fabric on television or when one photographs a

computer screen with a phone camera. This happens because two different specific patterns are being overlaid (the striped pattern of the shirt overlaps the television's screen grid and the computer's pixels overlap the ones from the phone) and therefore generate a visual intersection between them. Moiré patterns can happen in many types and are thus always contextual given that they depend entirely on the primary patterns that are being intersected.

Meaning

What this article aims to suggest is that somehow it is possible to observe meaning and the production of meaning as a process and phenomenon in some ways similar to a moiré pattern, in the sense that meaning is always the result of the intersection between *objects* (in the broad sense) and the vectorial senses that have been applied to them, either out of necessity, bonding, survival or, in the most analysed case of this article, violence.

Meaning could then be perceived, analytically, as a circumstantial consequence of the intersection between *things* and our efforts to inscribe them in a specific and referential scheme of tangibility.

This analysis of meaning (again, in the broad sense) has already been extensively analysed by several people in the fields of Linguistics, Art Theory, Art Practice and Gender Studies. One of these people was Michel Foucault (he/him). Foucault addresses this intersection and interrelation between us and the world by saying:

We must not resolve discourse into a play of pre-existing significations; we must not imagine that the world turns towards us a legible face which we would have only to decipher; the world is not an accomplice of our knowledge; there is no pre-discursive providence which disposes the world in our favour. We must conceive discourse as a violence we do to things, or in any case as a practice which we impose on them.¹

Another person who commented deeply on this topic was the well-known French author, philosopher and feminist theorist Monique Wittig (she/her), whose work profoundly underlined the materiality of language and the production of meaning, presenting these as a mutable territory definitely susceptible to manipulation. She says:

Language is a special material because it is the place, the means, the medium for bringing meaning to light. But meaning hides language from sight. For one sees, one hears only the meaning. Then isn't meaning language? Yes, it is language, but in its visible and material form, language is

shape, language is letter. Meaning is not visible, and as such appears to be outside of language.²

Linn da Quebrada (she/her) is a Brazilian actress, singer, social activist, composer and many other things, whose work challenges the boundaries and restrictions of gender and sexuality. Of all the fronts that Linn da Quebrada assumes, a concern with language can be found throughout her entire work, from subversive wordplay to canon dismantling. Her debut album from 2017 is called *Pajubá* and it refers to the secret language that was spoken by Brazilian travesties as a community building and survival mechanism. In her 2018 documentary *Bixa Travesty*, she says:

The finger of the man, who loves to point at things and say: “woman”, “trash”, “home”... Naming. He loves naming and making sense of things. So I thought: why can't I do that too?³

Here, Linn da Quebrada is alluding to the violence processes through which some realities have been historically marginalized, outlining the idea that some communities and identities have had the privilege of defining what gets to count as effectual, as valid. What gets to count as real.

Jota Mombaça (she/her/they/them) is a non-binary bicha. They are a writer, performer and researcher working among the fields of post-colonialism, Queer studies and political intersectionality. In their 2021 book *Não vão nos matar agora* (“*They won't kill us now*”) Jota Mombaça explores the complex possibilities of inhabiting a context marked by colonialist wounds.

I want to speak out against the costs of such journey, since in the diagram of racializing devices that represent my body as being marked by a wound, I do not exist in a way that is capable of making this journey without pain. For that it will be necessary to re-describe cisgenderness and whiteness as a form of ontological extortion.⁴

Again, Jota Mombaça is referring to the atrocious interference between subdued bodies and imposed narratives.

Europe

We can consider the invention of perspective as a defining feature of “European art”. This Cartesian device for space representation and consideration was crucial for the development of the continent's art, architecture and scenography for several centuries, and its products were one of the cultural marks of the European expansionist policy.⁵



Figure 2
Inferno,
 unknown author,
 ca. 1510-1520

Undeniably, Europe's grandeur is outstanding when we observe it from the perspective of a linear history marked by a succession of innovations and discoveries that ultimately stood out, particularly in a report that sets them in an uneven relation with non-European expressions.

If we consider the birth of perspective, we cannot ignore that its central project was the retrieval and the restitution of classical ideals of order from the ancient Greek and Rome, that could solve the inconsistencies of the Goth representational systems. The practice of Renaissance artists, strictly linked with that of architects, systematized what was considered the ultimate representational device, whose special claim was to have mastered a direct and faithful representation of reality.

But the problematic of representation becomes more complex when we start posing questions such as: Where did the European expansionist project locate the cultures whose developments were not in tune with Europe's ambitions? How did Art and creativity become an instrument to channel these hostilities? How did the bloom of perspective itself render, not only a refreshing representational device, but a complete and absolute structure of thought, based on the axis of rationality, verifiability and factuality? In other words: How did science kill magic?

Portugal is one of the countries profoundly responsible for the colonialist processes through which European *perspectives* were superimposed over cultures whose practices and beliefs threatened the imperialistic Catholic ideology.

Such blemishing intentions are noticeable in a particular painting from ca. 1510-1520 displayed at the Museu Nacional de Arte Antiga in Lisbon and whose author is an unknown Portuguese master. The painting, titled *Inferno* [*Hell*] [Figure 2] depicts a

torturous scene where several humans are being punished for their earthly sins. But the most flagrant feature of this painting is the representation of a demon wearing Amerindian feathers and sitting in an African throne. These elements belonging to non-European cultures are extracted from their original contexts and manipulated to convey a meaning of undeniable demonization.

Decontextualizing and demonizing non-European subjects and objects is just one of the ways in which art has been instrumentalized to generate racist and colonialist narratives.

In 1940, Lisbon celebrated one of the most saturated odes to the magnificence of the Portuguese empire, an immense multi-pavilion mega-exhibition called *Exposição do Mundo Português (EMP)* [*Exhibition of the Portuguese World*]. This immense exhibition was meant to glorify the Portuguese culture and the ways in which it had expanded itself throughout the world. In fact, most of the discourses that exalt Portugal as a singular and remarkable culture still rely on the so called “golden era” of the atrociously acclaimed “discoveries” that Portugal carried out in the 15th and 16th centuries, colonizing different territories.

In *EMP* a series of buildings, exhibitions, pavilions and monuments were erected in a vast area of Lisbon named Belém to demonstrate the mightiness of Portugal in all its scopes. Naturally, a section of the *Exposição* was destined to display the colonial deeds. Apart from exhibiting stolen indigenous art pieces and other cultural artefacts presenting them as Portuguese property, life-size replicas of each of the colonies’ dwellings and surrounding landscapes were built. Furthermore, indigenous people were brought to inhabit these spaces and re-enact their own lives, practices and rituals, constituting an uncanny setting meant for civilized visitors to observe and apprehend the greatness of Portugal’s empire.

Throughout Lisbon one can still easily find traces and elements of a colonialist landscape. The area where *EMP* took place is currently devoid of these constructions, with some exceptions such as the *Padrão dos Descobrimentos* monument. However, the toponymy of the square continues to be *Praça do Império* [*The Empire’s Square*], functioning as a reminder of a past or not-so-past power structure.

The iconography related to the Portuguese marine expansionist project is easily identifiable in various elements that compose Lisbon’s public space. Ships, compasses, waves, ropes, anchors and armillary spheres can be found in subway icons, pavement designs, architecture, shopping centre visual identities⁶, public sculpture and many other contexts.

The infamous statue of Padre António Vieira [Figure 3] in Largo Trindade Coelho in Lisbon, installed in 2017 is a clear example of how unquestionably an explicit colonialist message is allowed to occupy a public space, placing three indigenous children at the feet of a priest that stretches his arm lifting up a Christian cross,

Figure 3

Statue of Padre António Vieira, Marco Telmo Areias Fidalgo, 2017



exerting a factual violence against individuals and communities whose cosmologies and ancestries recall a history of exploration and epistemicide.

The semiotic discourse present in the statue of Padre António Vieira is somehow comparable to the one visible in a 1908 photograph of Pablo Picasso in his studio in Bateau-Lavoir, Paris, displayed at the entrance of the temporary exhibition *Constellations III: a choreography of minimal gestures* at Museu Berardo. In this image, we see Picasso, seated, entangled in his own deep thoughts, the mark of a tormented genius, surrounded by indigenous African art pieces behind him. The fact that Picasso is located in the foreground of the picture presents him as the protagonist of this story, as a leading figure somehow superior to the primitive ethnic objects from which he drew inspiration, to later transform into brilliant copyrighted images, as the result of his enhanced virtuosity.

Even more recently, a note of denunciation was released by the activist collective AFROntosas, condemning one of the last campaigns promoted by Fundação Calouste Gulbenkian, which reterritorializes a specific phrase⁷ used in insurgent movements of black communities.

This is the new ad campaign for the Gulbenkian Museum. The phrase “art matters” superimposed on images of white subjects from a history of European art. [...]

What the Gulbenkian Museum did can be easily understood through the process of Deterritorialization and Reterritorialization, [...] the process by which an ensemble of relationships, called a territory, loses its current organization and context. [...] For example, in a history of

Portuguese colonialism, religious iconography, language, and cultural and social practices of colonized people were often destroyed — or “deterritorialized” from their locality — as a means of subjugation and control. Portuguese religious iconography, language, and social and cultural practices were imposed in their place through violence, as colonies became “reterritorialized” under the image of their oppressors. This is done in the aid of supporting the capitalist enterprises in a history of Portuguese empire, alienating a people from their history and culture as a form of domination, in the pursuit of power and profit.⁸

Many are the resources, devices and methods through which colonialist significations were and are still constructed to sustain the theological hegemonic monolith of white cis-heteronormativity. It is urgent that we dismantle this structure.

Notes

1. Foucault, Michel. 1981. *The Order of Discourse*. Boston: Routledge & Kegan Paul.
2. Wittig, Monique. 1983. *The Point of view: universal or particular?*. Feminist Issues 3.
3. Priscilla, Claudia; GOIFMAN, Kiko. 2018. *Bixa Travesty*. Paleotv.
4. Mombaça, Jota. 2021. *Não vão nos matar agora*. Rio de Janeiro: Cobogó.
5. Excerpt from the presentation text of the conference *2D/3D . producing illusion*, held at malvoadora, Porto, May 27 and 28, 2021
6. The Colombo shopping centre in Lisbon is a particularly noteworthy case.
7. *Black Lives Matter*
8. AFRONTOSAS, 2021. *ART Black Lives Matters*. AFRONTOSAS, accessed 20 July 2021, <<https://afrontosas.medium.com/art-black-lives-matters-448960cfe427>>

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- MOMBAÇA, Jota. 2021. *Não vão nos matar agora*. Rio de Janeiro: Cobogó.

Biographical notes

Agostino de Rosa

Architect and Full Professor at Iuav (Italy) and at VIU. He has written books and essays on the theme of representation, the history of images and land art. He is editor of the critical edition of perspective works and treatises by Minims monk Jean François Nicéron (1613–1646). He works with an international team on the Roden Crater project (Painted Desert, Arizona USA), designed by American light artist James Turrell (1943) and directed by Richard Andrews, currently on construction. He has curated exhibitions in Italy and abroad.

Clara Imbert

French artist based between Lisbon and Paris who graduated from Central Saint Martins in 2017. Her approach consists of an exploration of the relationship between the notions of reality and illusion, space and perspective, the object itself and the observer. Clara Imbert finds inspiration in physical, mathematical and philosophical theories to experiment with different materialities and thus unravel intangible ideas. She studies the invisible to reveal new dimensions. Her research leads to the realisation of projects that can take various forms such as photography, sculpture and installation. These objects-works with unique symbolism are full of possibilities: are they dials, compasses or totems?

Gaspar Cohen

Artist and researcher interrogating the capital-colonial complex embedded onto digital technologies. Both through texts, constructed electronics and process-intensive computation, their work formats as unstable concept-driven systems and situations addressing thresholds of

augmentation as ghostly offsets of reality, the politics of noise&error, and critical publishing formats. He is currently a Phd candidate in Philosophy of Technology at the University of Lisbon, and fellow at the Chronotopia Echoes Artistic Lab (CTM/Athens and Epidaurus Festival/KSYME).

Gil Madeira

Graduated by the Faculty of Fine Arts of Porto (2012) he continued his studies at the Akademie der Bildende Kunst in Vienna. He exhibits regularly since 2010. Having developed work in various fields, such as photography or video installation, he currently focuses on painting. He is interested in how screen's light affects our vision and perception of the world, as well as the impact of an entire culture of digital image. In his artistic research, he uses a variety of tools and techniques, including drawing and editing software, as well as industrial materials and techniques. These allows to explore different ways of representing the intensity of light, or of making it exist in painting, thus seeking to make physical images or sensations that are common to us, but which are normally enclosed in the digital space.

Giulia Tarei

Architect and Phd student at DSDRA (History, Drawing and Architectural Survey Department) of Sapienza University of Rome. In 2014 she obtained a bachelor degree in Science of Architecture at Roma Tre University of Rome, studying Descriptive Geometry, and later, in 2018 she obtained a Master Degree in Architectural Survey deeping the Descriptive Geometry topic with a study of the Astrolabium Catoptrico Gnomonicum in Palazzo Spada, designed by Emmanuel Maignan. In 2019, furthermore, she

contributed to the publication of the book *L'arte del Disegno a Palazzo Spada. L'astrolabium Catoptrico-Gnomonicum di Emmanuel Maignan*, L. Farroni, De Luca editori d'Arte, Roma 2019.

Hanneke Grootenboer (keynote)

Professor and Chair of the History of Art Department at Radboud University, the Netherlands. Prior to this appointment, she taught at the University of Oxford, where from 2014 to 2016 she served as the Head of the Ruskin School of Art. She also taught at Columbia University and the Jan van Eyck Academy in Maastricht, the Netherlands. She is the author of *The Rhetoric of Perspective: Realism and Illusionism in Seventeenth-Century Dutch Still Life Painting* (2005); *Treasuring the Gaze: Intimate Vision in Eighteenth-Century British Eye Miniatures* (2013); and *The Pensive Image: Art as a Form of Thinking* (2021), all published by Chicago UP. A co-edited volume on *Conchophilia: Shells, Art and Curiosity in the Early Modern Period* is forthcoming from Princeton University Press. Grootenboer is a member of the Editorial Board of the Oxford Art Journal.

Grootenboer's research is transhistorical. She approaches early modern visual culture through the lens of contemporary theory and art practice. Focusing on art as a form of thinking, her research critically engages with philosophy, theory, literature, and material culture. She published articles the semiotics of still life, intimate vision in miniatures, the phenomenology of portraiture, moving paintings and shells as things to think with. Grootenboer is the recipient of numerous awards including from the Leverhulme Trust, the Getty Institute and the Netherlands Institute of Advanced Study. She has been invited to deliver the Erasmus Lectures at Harvard University in the Fall 2021.

Jacob Gaboury (keynote)

Assistant Professor of Film & Media at the University of California, Berkeley, specializing in the seventy-year history of digital image technologies and their impact on our contemporary visual culture. He has held numerous fellowships from institutions across the humanities, sciences, and the arts, including the Max Planck Institute for the History of Science, the Internationale Kolleg für Kulturtechnikforschung und Medienphilosophie, the Association of Computing Machinery, the Smithsonian Institute, and the Social Science Research Council; and his work has appeared in a range of popular and academic publications, including Grey Room, the Journal of Visual Culture, Rhizome, Art Papers, and Camera Obscura. His forthcoming book with MIT Press is titled *Image Objects: An Archaeology of Computer Graphics*, traces a material history of early computer graphics told through a set of five objects that structure the production and circulation of all digital images today.

João Cabeleira (Coord.)

Architect and Assistant Professor at the School of Architecture, Art and Design (EAAD), University of Minho, João Cabeleira coordinates the courses of Geometry, Seminar 1C and Advanced Studies in Architectural Culture. Graduated in Architecture (2002) and Master in Architectural Heritage (2006), both by the University of Porto, his doctoral degree was granted by the University of Minho (2015). Departing from his research on Imaginary architectures he analyses treatises on architecture, optics and perspective, looking for intersections between projective science, perception and the resolution of architectural space.

João Pombeiro

Studied Fine Arts at the Escola Superior de Arte e Design das Caldas da Rainha, working mainly in the areas of painting, video and installation. In the last twenty years, he has been developing projects not only as a visual artist but also as a director, screenwriter, animator, graphic designer and illustrator. His work has been regularly presented in national and international exhibitions, publications and festivals, where he has been awarded for his video clips/experimental collage animation films. From his solo and group exhibitions it can be highlight *include Wait* (Museu Berardo, Lisbon) *A Very Short Introduction to Nothing* (Skånes konstförening, Malmö), *MEANINGLESSNESS* (Paulo Amaro Gallery, Lisbon), *Eu podia fazer isto* (Espaço Atmosferas, Lisbon), *Looking for Freedom* (Rosalux, Berlin), *A Escolha da Crítica* (Revolver Platform, Lisbon), *Arquivar Tormentas* (CGAC, Santiago de Compostela), *Project Room* (C.A.V., Coimbra), *Oh Dear!* (Galeria ZDB, Lisbon), *Exposição Introspectiva 1997–2004* (Galeria 24b, Oeiras) and *PORTUGÁL 30 artists under 40* (Stenersen Museum, Oslo).

José Capela (Coord.)

Architect (FAUP, 1995), PhD earned with the dissertation *Operating conceptually in art. Operating conceptually in architecture*. He lectures in architecture and theatre at the Universidade do Minho since 2000. Together with Cláudia Taborda, he curated the international conference *Architecture [in] Jout[Política]* for the 2010 Lisbon Architecture Triennale. He is the author of the chapter *Uma garrafa de Coca-Cola e duas estufas: política interna nas artes e na arquitetura* (A bottle of Coca-Cola and two greenhouses: internal politics in the arts

and architecture) of the book *Estética e Política entre as Artes* (Aesthetics and Politics in the Arts) (Edições 70) and publishes regularly in several magazines specialised in architecture and performing arts. With Jorge Andrade, he is co-founder (2003) and co-artistic director of mala voadora. He is responsible for the company's stage designs. In 2013, José Capela published the stage design catalogue *ways of doing nothing*. He was the chairman of the board of the Portuguese Association of Scenography from 2016 to 2018. He is the author of the installation *Windows*, which represented Portugal at the 2019 Prague Quadrennial, and its respective catalogue, *W: JC + JCD*. Over the last few years, he also collaborated with Companhia Nacional de Bailado, Teatro Nacional São Carlos and Casa-Museu Guerra Junqueiro; he designed the permanent exhibition of Porto's new Port Wine Museum, designed a set/installation for the public spaces of Teatro do Bairro Alto. A two-time nominee to the Prémio Autores as 'best scenographic work' in 2012 and 2017, he received this award in 2016 for mala voadora's Pirandello.

José Vítor Correia

Architect, graduated in 1993 by the former Technical University of Lisbon. He holds a PhD (2015) in the field of Architecture, with specialization in Drawing and Visual Communication, by the Faculty of Architecture of the University of Lisbon, where he lectures Descriptive Geometry courses (since 1996) and, more recently, Computer Graphics courses. His scientific research regards graphical representation science, mainly addressing the issue of perspective, to which he contributed with a new hybrid formulation (the Extended Perspective System), already implemented in a software prototype.

Laura Farroni

Researcher at the Department of Architecture of Roma Tre University, where she is part of the Academic Board of PhD in Architecture: Innovation and Heritage. She is a member of the ICOM Italia Digital Technologies Commission for Cultural Heritage. She is an expert on Baroque culture and the virtual reconstruction of its artifices. Since 2018, she is studying Palazzo Spada in Rome and the catoptric sundial by Emmanuel Maignan. The partial results are published in her book *The art of drawing at Palazzo Spada. Emmanuel Maignan's astrolabium catoptrico gnomonicum* (2019).

Livia Koeche

Brazilian female architect and urban designer graduated from the Federal University of Rio Grande do Sul (UFRGS). Draftswoman and traditional 2D animator, she develops and executes audio-visual, stage design and video mapping projects since 2014. Recently finished her Master's Degree in Visual Poetics (PPGAV/UFRGS) with the research *Public Situations: Project and Projection*, studying while creating site-specific poetic installations. Collaborator researcher in the Identity and Territory Research Group (<https://www.ufrgs.br/gpit> GPIT-PROPUR/UFRGS) since 2010. Currently based in Porto Alegre, Brazil. Portfolio: <https://liviakoeche.cargo.site>

Luís Mestrinho

Master degree in Sustainable Urbanism granted by the University College of London and a master's degree in Environmental Law by the Université Paris I/ Panthéon-Sorbonne. He is currently a PhD student at the School of Architecture, Art and Design of the University of Minho. Some of his

research interests are urban sustainability, underground urban development and marine urbanization. The author has published works in the areas of urban afforestation, disaster risk management and underground urbanism. In 2021 the author will publish the book: *Urbanismo Subterrâneo — the hidden face of the city* (Editora Gato-Bravo/PT, Editora Jaguatirica/Brazil).

Luísa Sol

PhD Architect, worked as an architect at Triptyque Arquitetos (São Paulo, Brazil) and at Aires Mateus & Associados (Lisbon). In 2018 finished her PDh Degree in Architecture *The Image of the City and its Represented-Space in 80's Music Videos: North-American Interferences in Contemporary Architecture Culture*, in FA — University of Lisbon and at NOVA School of Social Sciences and Humanities. She has written several essays for academic and non-academic publications. Researcher at the Research Centre for Architecture, Urban Planning and Design of the University of Lisbon (CIAUD) where she is an effective member.

Matteo Mancini

Architect and PhD, his main interests are related to Descriptive Geometry and history of representation. He participated in the research project on architectural perspective and the *De prospectiva pingendi* by Piero della Francesca. In 2016 and 2018 he has been a fellow researcher at the Department of Architecture of the Roma Tre University. Since 2018, he is studying Palazzo Spada (Rome) and its catoptric sundial. In 2021, he receives a one-year fellowship grant by the Fondazione 1563 in the *Advanced Studies on the Age and the Culture of Baroque*, program 2020.

Natacha Moutinho

She has been working as a visual artist and lecturer since 2000, having participated as curator and author in several exhibitions from which stands out *Tecendo uma partilha*, at Galeria da Garagem Avenida, Guimarães (2022), and *Acaso e Caos*, together with Carlos Corais, at Risco Tudo, Porto (2020).

Completed her PhD in Fine Arts, specialization in Drawing, at the Faculty of Fine Arts of the University of Lisbon, in 2016. In 2009 obtained a Master's degree in Drawing from the Faculty of Fine Arts of the University of Lisbon, having been trained as painter at the Faculty of Fine Arts of the University of Porto.

She works as Assistant Professor at the School of Architecture, Art and Design at the University of Minho, since 2006. She was the director of the Visual Arts bachelor until 2021. Integrated member of the R&D unit Lab2PT, she develops projects on the articulation between drawing, colour and walking, such as the international meeting *The Walking Body*, the International conference *Drifting Bodies/Fluente Spaces* or the research project *Atlas do Andar*.

Pedro Barbosa

Plastic Artist, graduated in Arts-Sculpture by the Faculty of Fine Arts of the University of Porto. He currently resides and works in Porto. His work is closely linked to the techniques of artistic production, having in the apprehension of the process the objective of discovering ways to interrupt, subvert or reinvent the act of doing, in order to imprint his traits and his mundane considerations on his work, through sculpture, drawing and painting.

Samuel Guimarães

Graduated in Art History (1992) and Master in Art History (1998) by FLUP; and Doctor in Artistic Education (2016) by FBAUP. He is Professor at ESMAE.IPP, since 1993, part-time, and Invited Assistant Professor at FBAUP since 2021, part-time. Since 2006 he has been the education coordinator at the Douro Museum — museum of the territory, developing projects involving schools, educators' groups, philharmonic bands, amateur theater groups and other informal collectives at the interface between artistic education and the arts performative. Within the scope of the eusoupaigem education program, he highlights the projects bios Fronteira, Segredos, Cartas da Liberdade, Café Central or Install Readings. He was coordinator of the educational service at the Serralves Museum and Park (from 1999 to 2002). He is currently a researcher at i2ADS — FBAUP (since 2011) and belongs to the team at LABEA — Laboratório de Investigação em Educação Artística, Izads (since 2017), being one of the organizers of the 3 editions of IMMER — International Meeting on Museum Education and Research (2018, 2019, 2021). He publishes as regularly as possible in the field of artistic education and critical mediation.

Sara Franqueira

PhD in Theatre Studies (FLUL), with a thesis on scenography in contemporary times, master in Theatre Studies (FLUL), with a study on the relationship between scenography and visual arts, and Degree in Architecture (FAUTL). She develops research around contemporary scenography. She currently lectures History and Theory of Scene Design and Aesthetics and Contemporary Art at ESTC and has

taught Contemporary Visual Culture and Scenic Space at ESTAL.

With a regular creative activity in stage arts, besides integrating artistic teams, she authors more than 50 scenic spaces. She works equally on performative and transdisciplinary projects, on the development of exhibition spaces or on specific curatorship. She develops work in the area of cultural mediation with entities such as EGEAC, the Calouste Gulbenkian Foundation, BoCA or the Berardo Collection Museum. She was coordinator of the Performative Space section of the Portuguese Official Representation at the Prague Quadrennial in 2015 and guest mediator of the program *Architecture and Theatre — Dar Lugar ao Acontecimento* presented at the 32nd Almada Festival. She has been a member of the APCEN board (Associação Portuguesa de Cenografia) and co-founder of three theatre companies.

Sofia Menconero

Architect and a PhD student in architectural representation. Her main research topic concerns the graphical analysis and spatial interpretation of Piranesi's Carceri. However, she has also worked on urban and archaeological surveys, 3D reconstruction of unbuilt architecture, experimentation with spherical visualization, AR, RTI, and geometric analysis of Piranesi's works. Over the years, she has collaborated in the teaching activities of the Faculty of Architecture in Florence, the Dept. of Civil and Environmental Engineering in Perugia, and the Faculty of Engineering of the Sapienza University of Rome.

Vítor Grilo Silva

Lisbon-based independent researcher and artist. He holds a degree in Art

and Design from Escola Massana / UAB, Barcelona. He participated in several group exhibitions, highlighting *Reality Check* (Las Palmas, Lisboa, 2019) and developed collaborative projects such as *Projecto de demolição do Padrão dos Descobrimentos* (O Stand, Lisboa, 2020). Alongside Judit Saavedra, he is one of the co-founders of Wetland, a community-based platform researching queer methodologies and cultural analysis. Ongoing projects include the publication of a research on museology and intimacy.

Vítor Moura

Author and editor of several books and has published numerous essays on a wide range of aesthetic topics. He is author of *Show and Tell: The identification of documentary film* (Palgrave Macmillan, 2019), *Testing the blending* (ESA, 2016) and *Timing the aesthetic experience* (Università degli studi di Torino, 2015). He is Associate Professor in the Department of Philosophy at the University of Minho.

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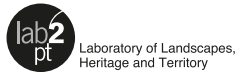
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On the 27th and 28th of May 2021, in the midst of pandemic restrictions, a group of artists and researchers managed to meet in Porto. For two days, under the initiative of mala voadora and Lab2PT, they enjoyed discussing illusion: linear perspective since its invention until its entailment under new technologies, and a wide variety of representation systems, practices and epistemological positioning that somehow converge within the production of visual illusion. This book bears witness to what happened there.

The Landscapes, Heritage & Territory Collection promotes the publication of texts in the Research, Essay and Catalog lines, under the seal of Lab2PT with the aim of promoting the circulation and dissemination of their scientific production within the main areas of the R&D unit—Archeology, Architecture & Urbanism, Design, Geography, Geology, History and Visual Arts.