



MESH

Nikola Tasic

Written part of the Artistic Diploma work, titled

MESH - The Fragility of Private Space

submitted by Nikola Tasic

at the

University of Applied Arts Vienna

Institute of Fine Art and Media

Department of Digital Art

Field of Study: Media Art / Branch of Study: Digital Art

Advisor: Univ.-Prof. Mag.art. Ruth Schnell

Co-advisors: AProf.Mag.art. Rini Tandon, Sen.Art. Mag. art. Martin Kusch, Sen.Art. Dipl.-Ing. Nicolaj Kirisits

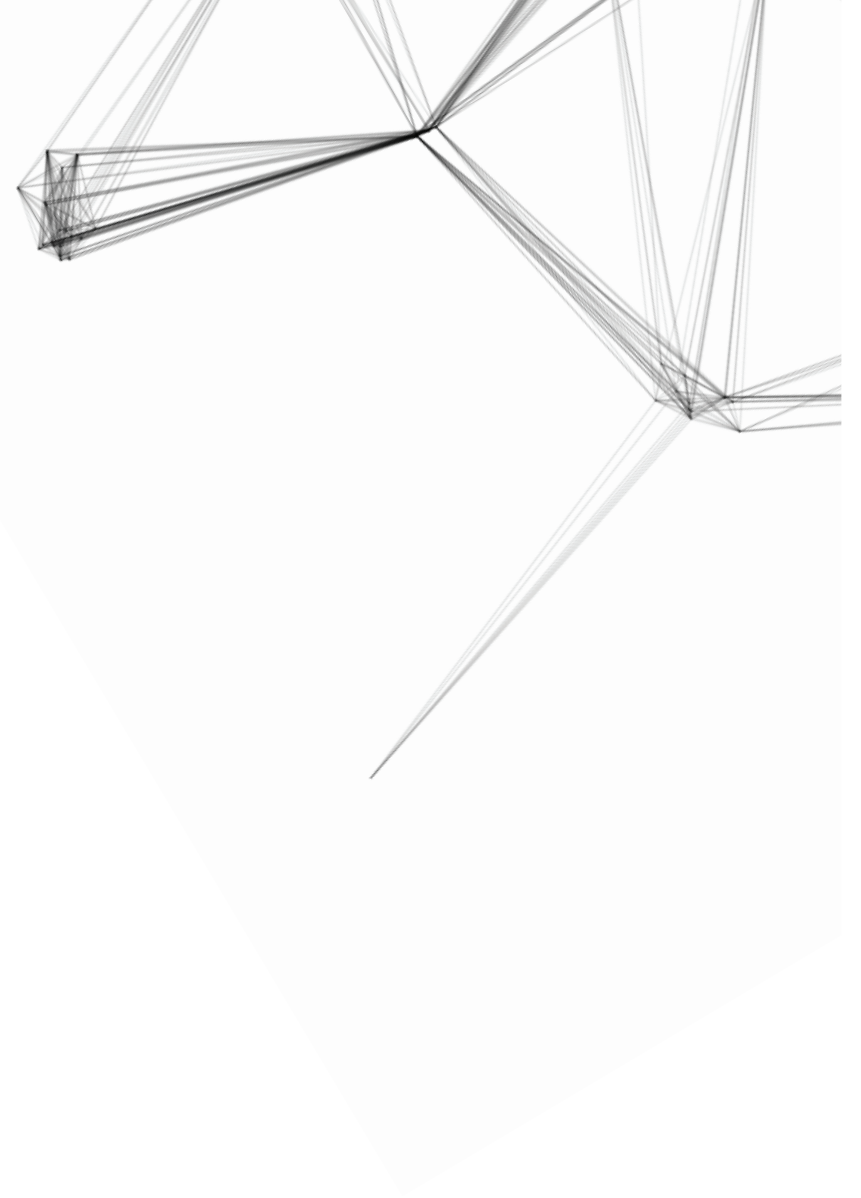
Summer semester 2015

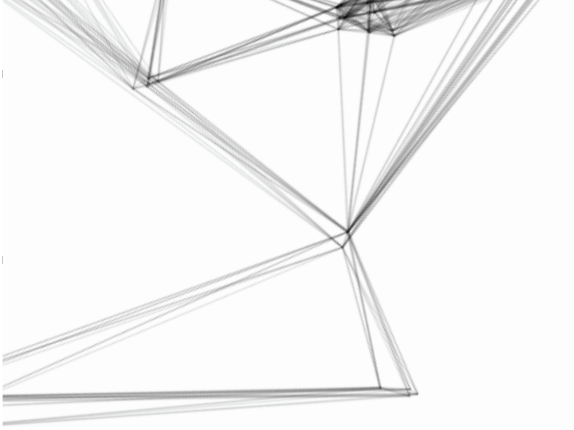
Index

1. Key words	2
1.1 Abstract	3
2. Private / privacy	4
2.1 Private space	6
2.2 Room - private indoor space	7
3. Installation art and space	8
3.1 Immersive virtual reality	10
4. Mesh - about the work	11
4.1 Process	12
5. Photogrammetry	16
6. Influences	17
References	19
Image references	20
Bibliography	21

1. Key words

Private space, fragility, fragility of space, room, installation, projection, photogrammetry, loop, a private corner as model





1.1 Abstract



The installation Mesh uses the idea as well as the physicality of personal space, in order to focus on the growing fragility of intimate space today. By projecting a scanned version of my personal space onto a 1:1 model of the same space, Mesh creates a loop of self-reference. For this project, a part of my working space is rebuilt as a panel-box model. The model is simplified in form, but detailed in its visual context. Multiple photos of particular parts of the room were taken to process this 2D information into 3D data through the technique of 3D scanning (Photogrammetry). New possibilities emerged by representing the photographed space as a 3D scan. The wire-frame structure derived from every 3D scan consists of a network of innumerable thin lines that mold every object. These fine graphic structures, seen on the model emphasize the transparent sense of oneself, of privacy and its fragility.

Further in the text I will deal with these notions, which are crucial to my work.

2. Private/privacy

Humans have always had a need for privacy. In the most fundamental form, privacy is related to the most intimate aspect of being human.

The issue of privacy can be seen already in the 4th century BC in the writings of Socrates and other Greek philosophers¹, when a distinction is made between the outer and inner, between public and private, between society and solitude. In the fifteenth century the word privacy was used in England and historical research shows that colonists in New England respected privacy in relation to an individual's home, family, and even written communication. Individual privacy started to emerge as an important social and legal issue throughout the second half of the nineteenth century. The last two decades, in particular, witnessed the development of new privacy-invasive technologies, such as the portable camera, that gave rise to calls for the legal protection of individual privacy.

*"An important change took place with the colonization of America. It appears that issues of privacy were brought along from Europe. The ownership or possession of land in the new world furnished a secure base for the privilege of privacy. Because of the distance between homesteads, in the view of David Flaherty, physical privacy became a characteristic of everyday life, and home itself became the primary place of privacy."*²

Today it is generally accepted that everybody has a need for privacy, although the way it is appreciated differs from culture to culture from person to person.

The general discussion on privacy started shortly after the Second World War in the United States. Numerous publications were devoted to the

issue of privacy. These publications culminated in early sixties due to a project called *The Impact of Science and Technology on Privacy*.

*"In almost all publications from that period, three words are used in relation to privacy, freedom, control, self-determination. Privacy is described as a right to be let alone and a right of each individual to determine, under ordinary circumstances, what his or her thoughts, sentiments and emotions shall be when in communication with others. Because of the advancement in technology, privacy becomes an ever growing concern."*³

Further on as can be seen from the literature on the subject, two dimensions of privacy can be distinguished: a relational one and an informational one. The first deals with the relation one has to other people, for example controlling who may enter the domestic environment or who is allowed to touch one's body. The informational dimension is related to the collection, storing and processing (personal) data. Common to both dimensions of privacy is the need to maintain control over personal space, the body, and information about oneself. In other words privacy can be described as the individual's right to self-determination, within certain borders, to his home, body, and information.

In Alan Westin's study called *Privacy and Freedom* (1966) four functions of privacy, which are still important in everyday life, are something to pay attention to.

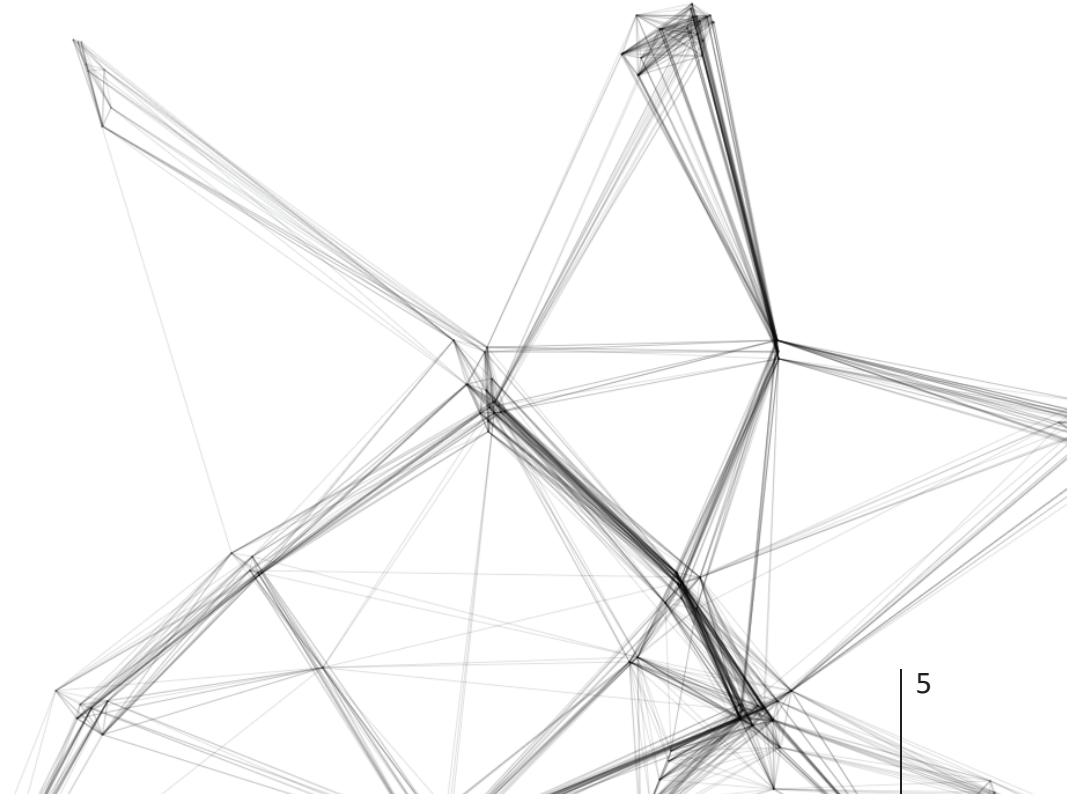
The first is a need for personal autonomy, because of which privacy is a basis for the development of the individual. It supports normalcy in human psychological functions and promotes stable interpersonal relationships

and personal improvement.

Secondly, there is need of privacy as a form of emotional release due to tensions in everyday life.

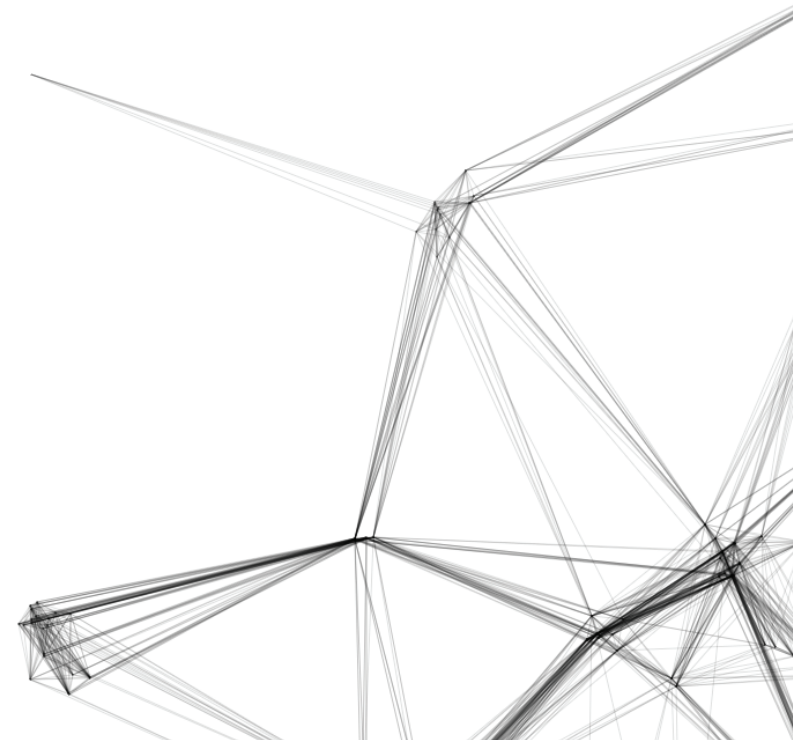
A third function is that of self-evaluation and decision making. Each individual needs to integrate his experiences into a meaningful pattern in order to exert his/her individuality on events. Solitude and opportunity for reflection are essential for creativity. Individuals need space and time to process large amounts of information. Privacy gives an opportunity to each individual to consider alternatives and consequences and act as appropriate as possible.

The fourth function is the need for a limited and protected communication, which is particularly important in urban life.



2.1. Private space

Personal space is an invisible, unconscious, personal comfort zone that varies depending on the size and environmental context. Personal space is the space we keep between ourselves and others; it is the space that travels around with us. It is the space we “claim as our own”. Put another way, personal space is the region surrounding each person, or the area that a person considers his or her domain or territory. Personal space, and how an individual operates in a given space, is considered a form of nonverbal communication by behavioral scientists and communication experts. Researchers have found that personal space is that space, which when crossed, causes the person to feel threatened by the “invader,” who is too close. Our need for personal space, and our need to control this space, is neither conscious nor intentional. What this means is that we are not aware that we set distances or that there are rules for how close to stand or where to sit, but that each culture sets norms for the understanding of personal space. Some of the earliest studies of personal space come from sociological thinkers such as the interactionist Erving Goffman (1967), and ethnomethodologist Harold Garfinkel (1967). It was the work of the anthropologist Edward T. Hall in the 1960s that benchmarks much of the contemporary work done on personal space. Hall developed the term “proxemics, the study of man’s perception and use of space” to describe how humans socially construct personal space. Hall says we communicate through how close we stand to one another. Hall says individuals’ proxemic bubbles vary, and each culture has different norms surrounding personal space.



2.2 Room - private indoor space



Lucas Cranach the Elder paints Cardinal Albrecht of Brandenburg as Saint Jerome (with friends) in his study, 1526.

E. Ruhmer. Cranach London: Phraidon Press, 1962. Plate 21. Robert E. Smith 2006-06-05

A room is not just private space, isolated from the public realm. In the age of digital media, rooms are, perhaps more than ever before, integral, interconnected hubs of communication. They are personal, private spaces of identity marked out as such, to be seen as troughs containing personal objects, and things.⁴

As the terms of privacy and private life changed through time, role of the room became symbol of that change. The role of rooms dates back to early Minoan culture around 2200 BC. Excavations at Akrotiri in Santorini, Greece reveal clearly defined rooms within given architectural structures. The nineteenth century in particular distinguished the term private room from the commonly used term space, because by then attitudes towards privacy had been significantly improved. In upper-class homes there was a marked difference between the rooms designed for receiving guests and other parts of the house or apartment. On the other side living conditions of peasants and workers did not permit concealing a side of life that became, by virtue of its very concealment „private“.⁵ The ground floor of every building contained a host of tiny rooms that opened directly onto the street. In these rooms people ate, slept and worked their trade.⁵

A particular type of a private room emerged through history and it had its variations depending from country to country. It was called cabinet. A cabinet was one of a number of terms for a private room in the domestic architecture and that of palaces of early modern Europe, a room serving as a study or retreat. Such a room might be used as a study or office, or just a sitting room. They also offered more privacy from servants, other household members, and visitors. Typically such a room would be for the use of a single individual.

3. Installation Art and Space

Before the term „Installation art“ became a part of the patios of contemporary art, there was the term “Environment”, which was used by Allan Kaprow to describe his room-size multimedia works.⁶

We understand our being or dwelling in the world through a matrix of place perceptions.⁷

Place is a physical environment (buildings, towns and cities) so as to “concretise our image of the world”.⁸ The image or schemata of the world which we carry, originates from our interaction with places (walking on a path, entering the house, sitting on a chair)⁹. Neuroscience has found that the brain uses an interactive process of repeated cycles of imaging, presenting and testing to make sense of the world and ourselves in it.¹⁰

In this process, how we perceive, experience and remember our surroundings depends on our awareness of them.

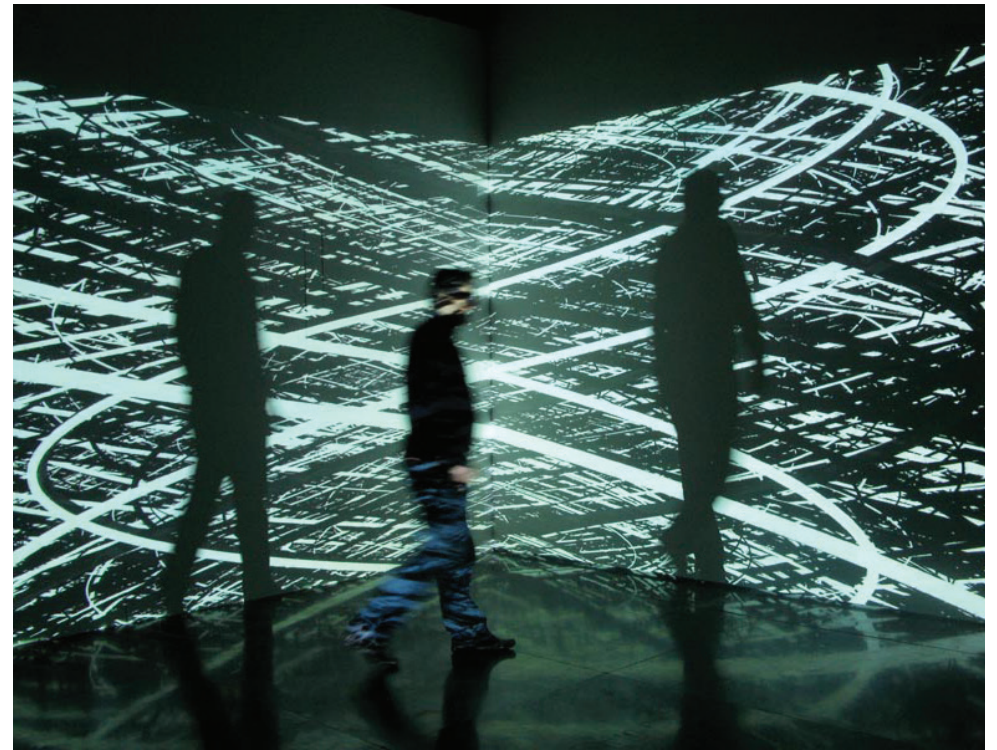
Having that in mind, it is crucial to take a look at the definition of the notion of space. Space is a multidimensional concept, with psychological and sociological as well as perceptual, pragmatic and aesthetic meanings and it cannot be reduced to a single definition, even within a single culture. In some cultures space is conceived as a stable “field” that surrounds objects and through which they move. In others, it is conceived as something objects create by their existence, relative position and movements. In some cultures space is experienced primarily as a visual “field”, in others it is defined largely by sound, in yet others, space is a tactile or kinesthetic construct and experience. In short, space is a cultural construction.¹¹ And like other cultural constructions it changes as the conditions of cultures

change. New words, idioms, expressions and metaphors enter the usage of language: new themes and genres arise in literature, new materials and forms emerge in the visual, plastic and performing arts. While computer scientists and artists sought to create virtual spaces using the computer, traditional artists were abandoning the sterile white walls and rectangular pedestals of the gallery in favour of an activation of the space between the walls.¹² Although experimental, works such as Kurt Schwitters’ *Merzbau*, which were constructed all over his home in the 1920s through the 1930s, received immediate recognition as the realization of a *Gesamtkunstwerk*, today we might look back and label the effort as an early artwork. In the 1950s, artists such as Pollock, Allan Kaprow, James Rosenquist, and Claes Oldenburg began to obscure the line between the art object and its context, thus utilizing the space the work inhabits in order to enhance meaning. The installation artist takes into account the viewer’s entire sensory experience. The objects in an installation art space take on new meaning and the context of the elements defines the interpretation of the piece. Installation art often reflects and responds to the world we live in, thereby creating an interesting fusion of art and life.

By the 1970s we began to see installation artworks that seek to explore and satisfy the human desire to experience constructed realities. Artists incorporated film, video, performance, sound, objects, and architectural space to create complex aesthetic statements.



The Hannover Merzbau by Kurt Schwitters
Photo by Wilhelm Redemann, 1933



Irrationnal Geomertics 2008 by Pascal Dombis
Photo by Pascal Dombis

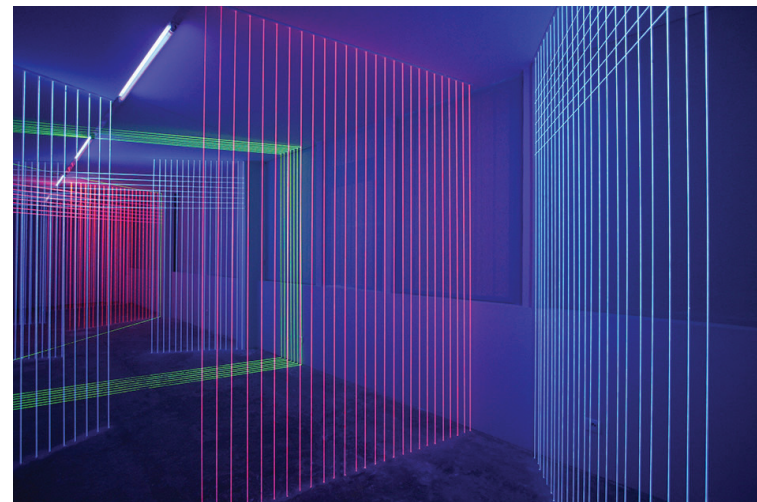
3.1. Immersive virtual reality

Over the past fifty years, artists have explored the computer's potential to create both virtual and physical art forms that embrace the concept of space. Through the use of immersion, interaction, and manipulation of both virtual and physical space, computer artists have created powerful aesthetic environments that enable audiences to experience alternative realities. Capitalizing on the psychological power of immersion, contemporary artists have created immersive spaces that enable the audience to escape to other realms and experience genuine emotional responses. The power of artistic illusion, as well as the human desire to create realities within realities, enables us to suspend our belief in our physically situated world and accept artificial constructs.

With the improvement of technology over the years, artists are more and more able to explore outside the boundaries. By using virtual reality as a medium, immersive virtual reality art is probably the most deeply interactive form of art. Immersive virtual reality is a hypothetical future technology that exists today as virtual reality art projects, for the most part. It consists of immersion in an artificial environment where the user feels just as immersed as they usually feel in consensus reality.¹³

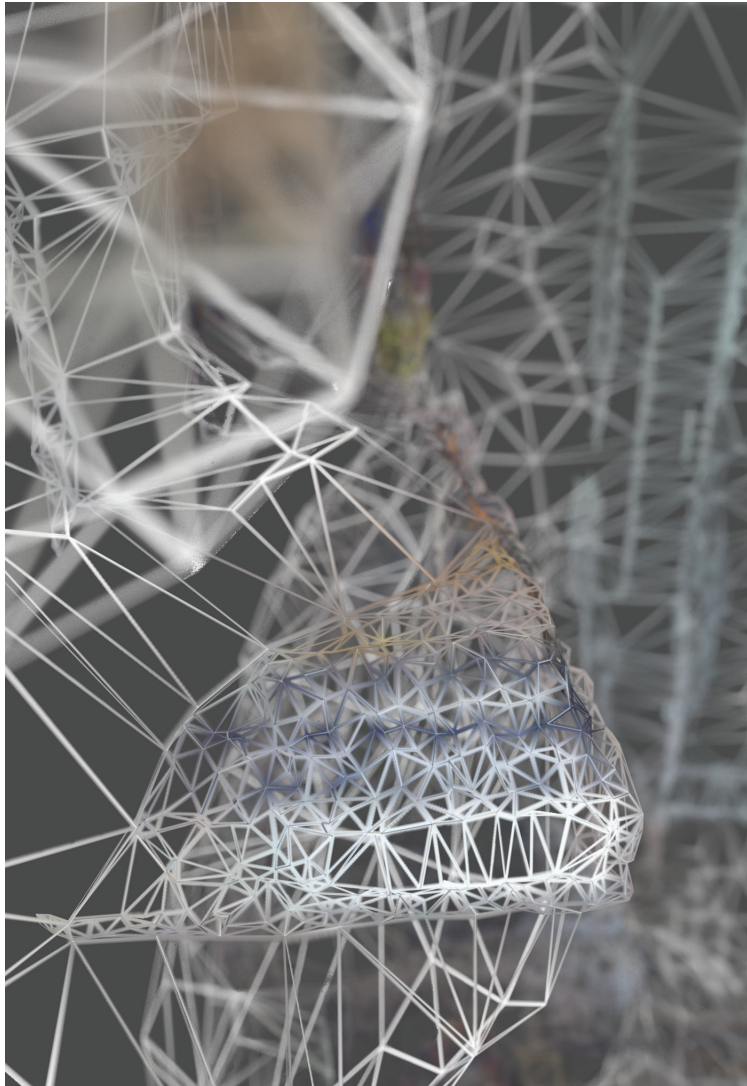


Forest grid from Osmose - Char Davies, 1995



Labyrinth – Nulla Dies Sine Linea - Jeongmoon Choi, 2010

4. MESH - about the work



Sketch for the MESH project

Ever since I started my studies in Vienna, I have lived and continue living in the same apartment. It is a small flat, which consists of a room, bathroom and kitchen. My sleeping area is also my working area. The installation Mesh represents a part of my working space rebuilt in a 1:1 model. An identical corner of a part of my room is represented here. Elements are reduced in form in order to create a clean base for projecting. The model has been painted white. Personal objects were randomly chosen to create a scene for photographing. Multiple photos of this part of the room were then taken to process the 2D information into 3D data through the scanning technique Photogrammetry. The wire-frame structure derived from every 3D scan consists of a network of innumerable thin lines that mold every object. These fine graphic structures, shown on the model emphasize the transparent sense of oneself, of privacy and its fragility.

My room has always given me a touch point of familiarity, some sense of permanence. It has always been a place of escapism, of discovery, exploration and creation. Dislocating the part of my room into another space, I am letting viewers to have an insight into a sphere of my private space. My privacy is exposed to others. Each element (object) that is projected represents, in a way, my everyday life, emotions, routines and memories. When photos of the particular part of my room were integrated into the scan software, they were converted into millions of dots, which combined together made an exact object that now exists in another reality. The thin lines that all projected objects are made of represent as well as emphasize the ease in intruding on private space.

4.1. Process

For this project, a photogrammetric process was used in which photos of the areas of interest were taken (in this case my working space). The photos had to be as sharp as possible so that the photogrammetric software could gather as much information as possible from the photo set.



Multiple photos are being taken around the object to collect the data for scanning



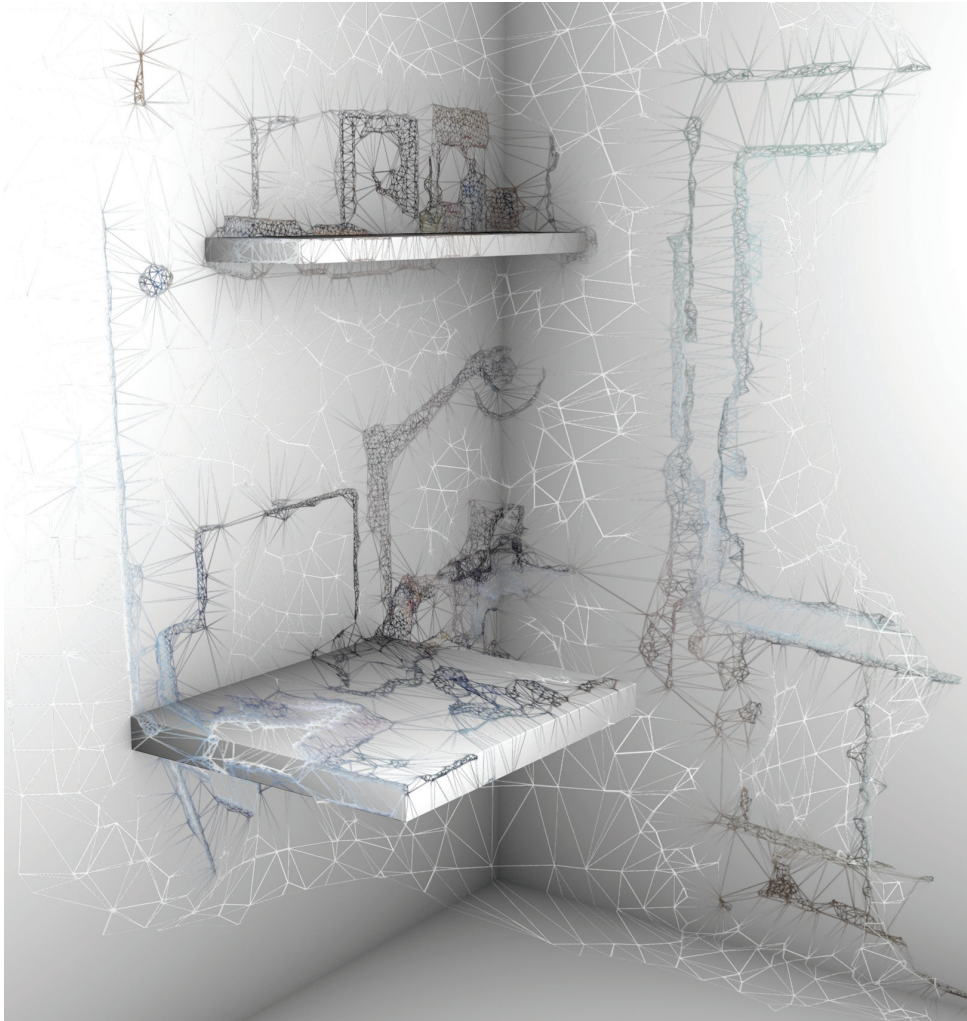
These images were then imported to the photogrammetric software “Visual SFM”, which processes the image sequence and outputs a file consisting of many colored points that represent the scanned object/area. A file with such points is called pointcloud. This pointcloud data is then further processed in a software called “MeshLab”. Because the photogrammetric software can produce errors, points which are visually classified as not accurate are deleted. Then it is transformed into geometric data, which is usable for any other 3d software. This is also where the aesthetics of the grid connecting the points in space is determined. The method used here is a combination of a few functions in MeshLab such as “Poisson-disk sampling”, “Ball Pivoting” and “Vertex attribute transfer”.

Pointcloud data derived from the images

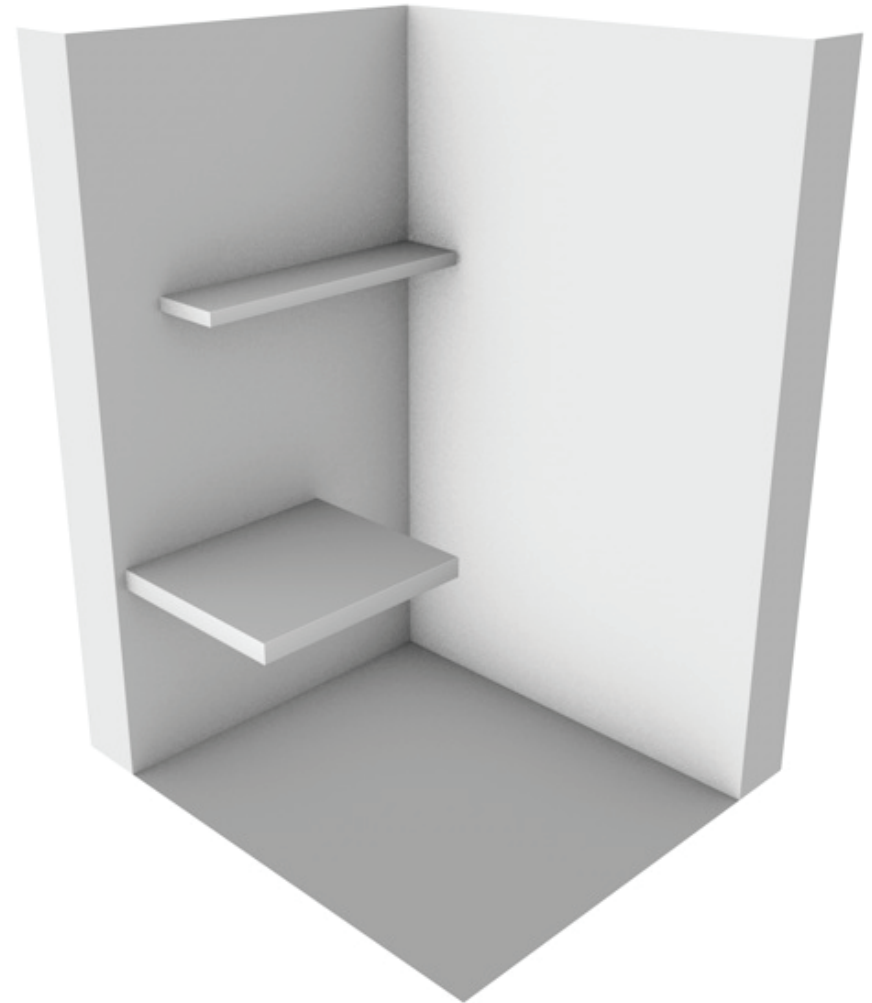




The next step was to build an exact 1:1 model of the room that was scanned and to project the scanned image. The material used for constructing the 1:1 model is MDF board (Medium-density fibreboard). The desk and the shelf were constructed out of XPS board (Extruded polystyrene foam). The model was painted white. The final model was used as a surface for projection.



3D simulation of the projection



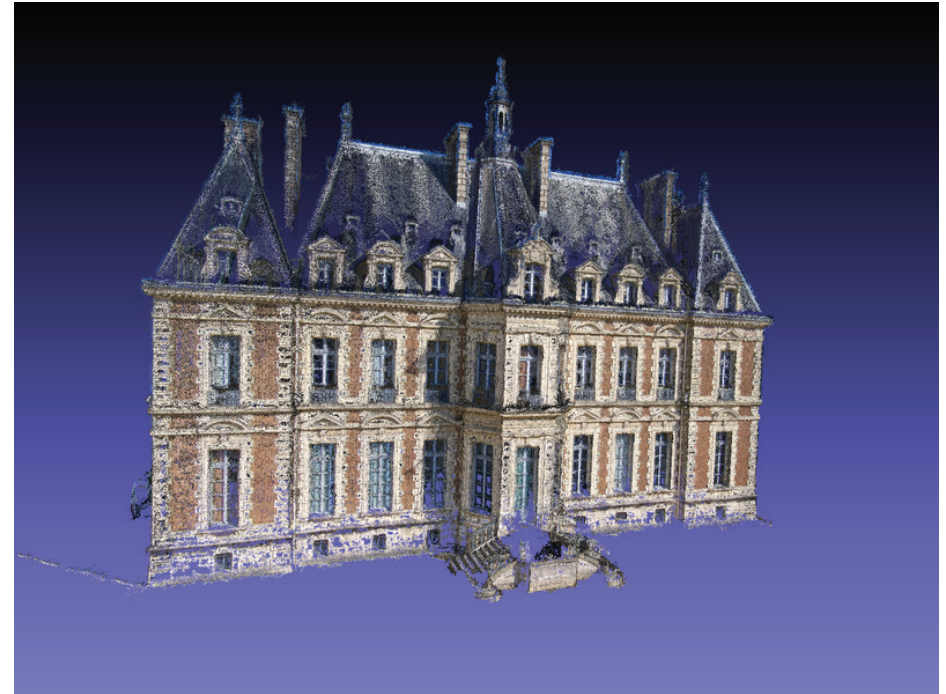
3D render of the model

5. Photogrammetry

Photogrammetry is defined as a science that studies mathematical models, that enable object measuring based on measurements made on images of that object, by correctly determining the spatial relation between both images and object. Photogrammetry incorporates methods from few different disciplines including optics and projective geometry. The main component in the processes for detecting a 3d point in space is based on triangulation, trilateration and multidimensional scaling. This technique is as old as modern photography, and is playing a key role in other fields such as geoinformatics, forensics, archaeology and architecture. It is used for obtaining measurements and 3d models of objects, situations, rooms, buildings, outdoor spaces, fields, mountains, cities, etc... Almost anything that has a shape in the real world can be recorded using this technique and represented as a 3d model in virtual space or be materialised with a 3d printer.

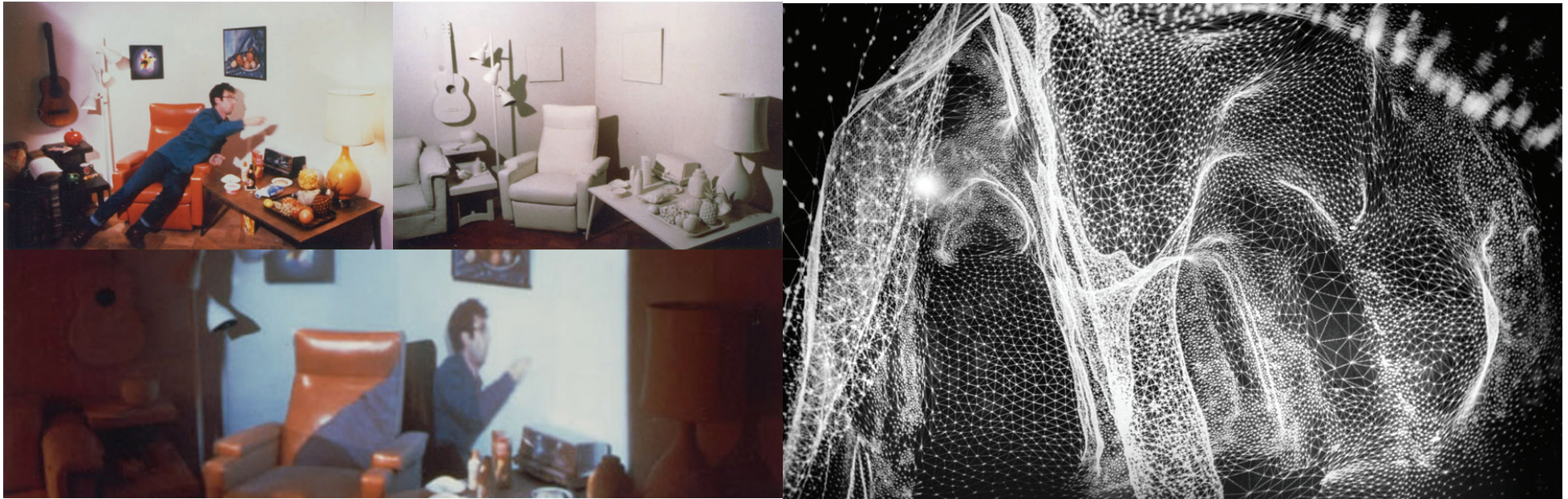


3D scan from part of a facade - arc-team-open-research.blogspot.com



A pointcloud of 8 350 379 points derived from hundreds of photos - opensourcephotogrammetry.blogspot.com

6. Influences



Michael Naimark

Displacements 1980-84 / 2005

Displacements is an immersive film installation. A room consisting of several objects is filmed with two performers. As a second step all the objects are painted white, as the walls of the space. As a third step, the filmed material is projected on the space, without the performers. Hereby an illusion was created where everything appears 3d, except for the people giving the space a very ghostlike and unreal output.

naimark.net

Joanie Lemerrier and James Ginzburg

Nimbes 2014

Nimbes is an audiovisual piece created for immersive dome environment. The visuals are derived from 3D scans of a forest which reminds on the aesthetics of the MESH project.

*Photos at Satosphere by Sebastien Roy
joanielemerrier.com*

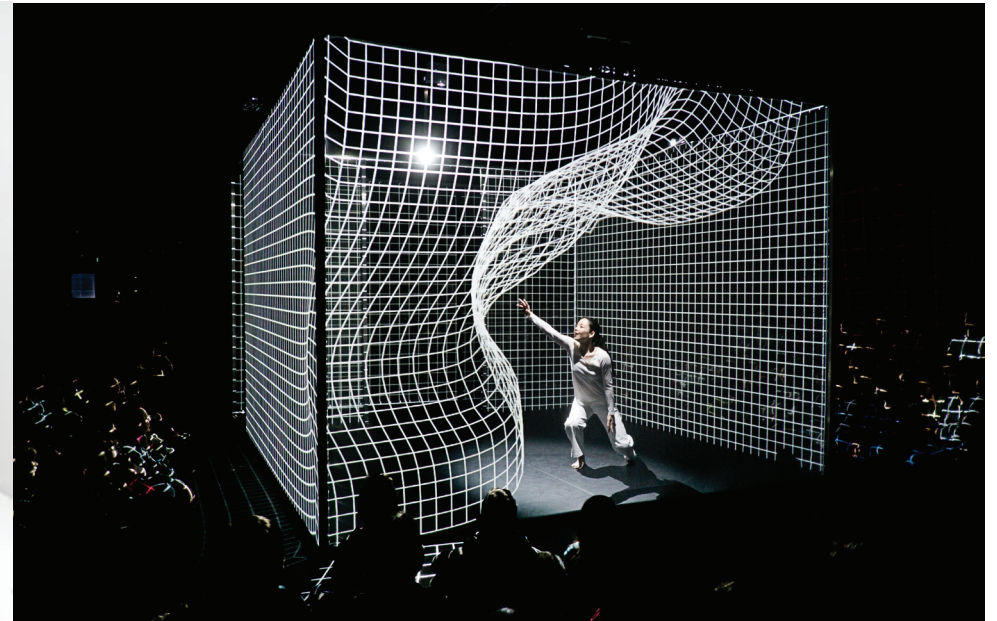


Thomas Raschke

wire frames "Küche" 2001

Thomas Raschke takes ordinary everyday objects and sculpts them out of wires in such way that they look like they are extracted from a 3D software.

*Photos at galerie wieland, Berlin
thomasraschke.de*



Adrien M / Claire B

Hakanaï 2013

Hakanaï is a solo choreographic performance that unfolds through a series of images in motion.

am-cb.net

References

1. Moore Jr., B.: *Cf. Privacy: Studies in Social and Cultural History*, p. 110, M.E. Sharpe, Armonk, New York 1983
2. : de Leeuw, K., Bergstra, J. (Eds.): *The History of Information Security: A Comprehensive Handbook*, p. 739, Elsevier B.V., Amsterdam 2007
3. Matyáš, V., Fischer-Hübner, S., Cvrcek, D., Švenda, P. (Eds.): *The Future of Identity in the Information Society*, p. 15-16, Springer-Verlag Berlin Heidelberg, Oxford 1987
4. Lincoln, S.: *Cf. Youth Culture and Private Space*, p. 8, Palgrave Macmillan, UK, 2012
5. Prost, A., Vincent, G.: *Cf. A History of Private Life: Riddles of identity in modern times*, Volume 5, p. 4, Harvard University Press, 1994
6. Kaprow used the word Environment in relation to his room-scale work at the Hansa Gallery. See Kaprow A.: *Notes on the Creation of a Total Art*, Hansa Gallery, New York 1958
7. Sharr A.: *Cf. Heidegger for Architects*, p.55, Routledge, New York, 2007
8. Norberg-Schulz, C.: *Cf. Existence, Space & Architecture*, p. 37, Praeger Publishers, New York, 1971
9. Norberg-Schulz C.: *Cf. Architecture: Presence, Language, Place*, p. 221, Skira Editore, Milan, 2000,
10. Zeisel, J.: *Cf. Inquiry by Design: Environment/Behavior/Neuroscience in Architecture, Interiors, Landscape, and Planning.*, p. 156, W. W. Norton, New York, 2006
11. Ran, F.: *Cf. A History of Installation Art and the Development of New Art Forms*, p. 8, Peter Lang, New York, 2009
12. Archer, M.: *Cf. Installation Art*, p. 18, Thames and Hudson Ltd, London, 1994
13. Nechvatal J.: *Cf. Immersive Ideals / Critical Distances*, p. 367-368, Lambert Academic Publishing, 2009

Image references

p. 7 - Lucas Cranach the Elder - Cardinal Albrecht of Brandenburg as Saint Jerome (with friends) in his study, 1526
E. Ruhmer. Cranach London: Phraidon Press, 1962. Plate 21. Robert E. Smith 2006-06-05
Link: <http://commons.wikimedia.org/wiki/File:CranachBrandenburgasJerome.jpg>
Viewed: June 5, 2015

p. 9
- Kurt Schwitters - The Hannover Merzbau, 1933
Photo by Wilhelm Redemann
Link: http://www.moma.org/explore/inside_out/inside_out/wp-content/uploads/2012/07/merzbau2-643x896.jpg
Viewed: June 5, 2015

- Pascal Dombis - Irrationnal Geomertics, 2008
Photo by Pascal Dombis
Link: http://upload.wikimedia.org/wikipedia/commons/4/41/Dombis_1687.jpg
Viewed: June 5, 2015

p. 10
- Char Davies - Forest grid from Osmose, 1995
Computer graphics by Georges Mauro
Link: http://www.immersence.com/centralizedImages/osmose/Osm_Forest_Grid_600_v2.jpg
Viewed: June 5, 2015

- Jeongmoon Choi - Labyrinth – Nulla Dies Sine Linea, 2010
galerie laurent mueller, Paris
Link: http://www.jeongmoon.de/assets/images/works/labyrinth_nulla_dies_sine_linea/Labyrinth_Nulla_Dies_Sine_Linea_4.jpg
Viewed: June 5, 2015

p. 16
- A pointcloud of 8 350 379 points derived from hundreds of photos
opensourcephotogrammetry.blogspot.com
Link: http://1.bp.blogspot.com/_Srbhy76ABkY/TRtKS8ot09I/AAAAAAAAAJI/

XdtTOegb3SE/s1600/SceauxDots01.png
Viewed: June 5, 2015

- 3D scan from part of a facade
arc-team-open-research.blogspot.com
Link: https://lh5.googleusercontent.com/b21yBfmMpWEHJIVF-dfd1gumD-HYuTWc9rnw_ey_adUk6lBpfcTJOvb-XIXUB1ctph_KcFtUu2KF6mkgvm87i5b-z4cMB12LL158l8rAfAOWB4hBDDAaMW
Viewed: June 5, 2015

p. 17
- Michael Naimark - *Displacements*, 1980
Link: <http://www.naimark.net/projects/displacements/dispx3.jpg>
Viewed: June 5, 2015

- Joanie Lemerrier and James Ginzburg - *Nimbis*, 2014
Photos at Satosphere by Sebastien Roy
Link: http://joanielemerrier.com/wp-content/uploads/2014/05/FORET-MG_7296_sebastien_roy-940.jpg
Viewed: June 5, 2015

p. 18
- Thomas Raschke - wire frames “Küche”, 2001
Photos at galerie wieland, Berlin
Link: <http://www.thomasraschke.de/wireframes/gross/start.jpg>
Viewed: June 5, 2015

- Adrien M / Claire B - Hakanai, 2013
Photo by Romain Etienne
Link: [http://www.theatredelarchipel.org/docs/agenda/Agendas/FestivalAujourd'huiMusiques2014/VisuelsFAM-Hakanai-CieAdrienM-ClaireB/AMCB-Hakanai\(c\)RomainEtienne5123.jpg](http://www.theatredelarchipel.org/docs/agenda/Agendas/FestivalAujourd'huiMusiques2014/VisuelsFAM-Hakanai-CieAdrienM-ClaireB/AMCB-Hakanai(c)RomainEtienne5123.jpg)
Viewed: June 5, 2015

All other images are owned by the author

Bibliography

Digital sources:

Bobker, Danielle: *The Shape of Intimacy : Private Space and the British Social Imagination, 1650-1770*, A Dissertation submitted to the Graduate School-New Brunswick, Rutgers, The State University of New Jersey, 2007
Link: <https://books.google.at/books?id=CzZlc5JNCiIC>
Accessed: June 5, 2015

Ran, Faye: *A History of Installation Art and Development of New Art Forms*, E-book
Link: <https://books.google.at/books?id=ExIO8xsOwecC>
Accessed: June 5, 2015

Reiss, Julie H.: *From margin to center: the spaces of installation art*, Massachusetts Institute of Technology, 1999
Link: <https://paralelotrac.files.wordpress.com/2011/05/jreiss-from-center-to-margin.pdf>
Accessed: June 5, 2015

Suderburg, Erika: *Space, Site, Intervention: Situating Installation Art*, University of Minnesota Press, 2000
Link: <http://pzacad.pitzer.edu/~mma/teaching/MS93/reading/Suderburg-1.pdf>
Accessed: June 5, 2015

Westin, A.F.: *Science, Privacy and Freedom: Issues and Proposals for the 1970s. The Current Impact of Surveillance on Privacy*, Columbia Law Review Association, Inc., 1966
Link: <http://www.jstor.org/stable/1120985>
Accessed: June 5, 2015

www.am-cb.net
arc-team-open-research.blogspot.com
www.joanielemarcier.com
www.naimark.net
opensourcephotogrammetry.blogspot.com
www.thomasraschke.de

Print sources:

Janson, H.W.: *History of Art*, Prentice-Hall, Inc. and Harry N. Abrams, 1962

Lincoln, Siân: *Youth Culture and Private Space*, Palgrave Macmillan, 2012

Nippert-Eng, C.: *Islands of privacy*, The University of Chicago Press, 2010

Nicolai, O., Davies, B., Duval, S.: *Privacy*, Revolver, 2006

Prost, A., Vincent, G.: *A History of Private Life: Riddles of identity in modern times, Volume 5*, Harvard University Press, 1994

Stocker, G., Schöpf C.: *Goodbye privacy*, Hatje Cantz Verlag, 2007

