WEDNESDAY, JULY 13, 2016

13.00 REGISTRATION

13:30 WELCOME and INTRODUCTION

14.00 PANEL 1: AGENCY
Chair: Matthias Bruhn (Humboldt-Universität zu Berlin)

Tristan Thielmann
Displaying Displays: A Praxeological Analysis of Computer Screens

Lasse Scherffig
From Action Capture to Interaction Gestalt

15:30 Break

16.00 PANEL 2: OPERABILITY
Chair: Luisa Feiersinger (Humboldt-Universität zu Berlin)

Pasi Väliaho
Projection and Empire: Notes on Robert Hooke's Picture Box and Other Operational Images

Moritz Queisner
Medical Screen Operations. How Head-Mounted Displays Transform Action and Perception in Surgical Practice

19:30 Conference Dinner

THURSDAY, JULY 14, 2016

09:30 PANEL 3: INTERFACE
Chair: Margarete Pratschke (ETH Zürich)

Carolin Höfler
Recoding the History: Parametric Modeling in Time Loops

Jan Distelmeyer
Effective Orders. Interfaces and Digitalicity

11:00 Break

11:30 PANEL 4: RESPONSIBILITY
Chair: Svea Bräunert (Brandenburg Center for Media Studies)

Hamid R. Ekbia
The Refracting Interface: Autonomy, Opacity, and Responsibility

Nina Franz
Synthetic Vision. Screen-Based Practices in Remote Warfare

13:00 Lunch break

14:00 PANEL 5: SCREENING
Chair: Moritz Queisner (Humboldt-Universität zu Berlin)

Kathrin Friedrich
›Hanging Protocols‹: A Brief Media Archaeology of Radiological Screens

Aud Sissel Hoel
Theorizing and Analyzing Surgical Screen Operations: The Case of Preoperative nTMS

15:30 – 16:00 CONCLUSION and **FUTURE PLANS**

Image
Knowledge
Gestaltung

Interdisciplinary Laboratory Image Knowledge Gestaltung
in the Hermann von Helmholtz-Zentrum für Kulturtechnik

SCREEN OPERATIONS

Conditions of Screen-based Interaction

Workshop, July 13th and 14th 2016

Sophienstrasse 22a, 10178 Berlin,
Central Laboratory (2nd courtyard, 2nd floor)

Organized by:
Kathrin Friedrich (*kathrin.friedrich@hu-berlin.de*)
Moritz Queisner (*moritz.queisner@hu-berlin.de*)

Workshop Abstract

Screen-based technologies increasingly merge the levels of action and perception. As processor performance has increased, and sensor and display technologies have been mobilised, the use and function of screen-based media have fundamentally changed. With image production, processing and transmission now being possible in real time, screens are no longer spatially fixed and temporally subordinated devices that display static images, but are increasingly integrated into visual practices.

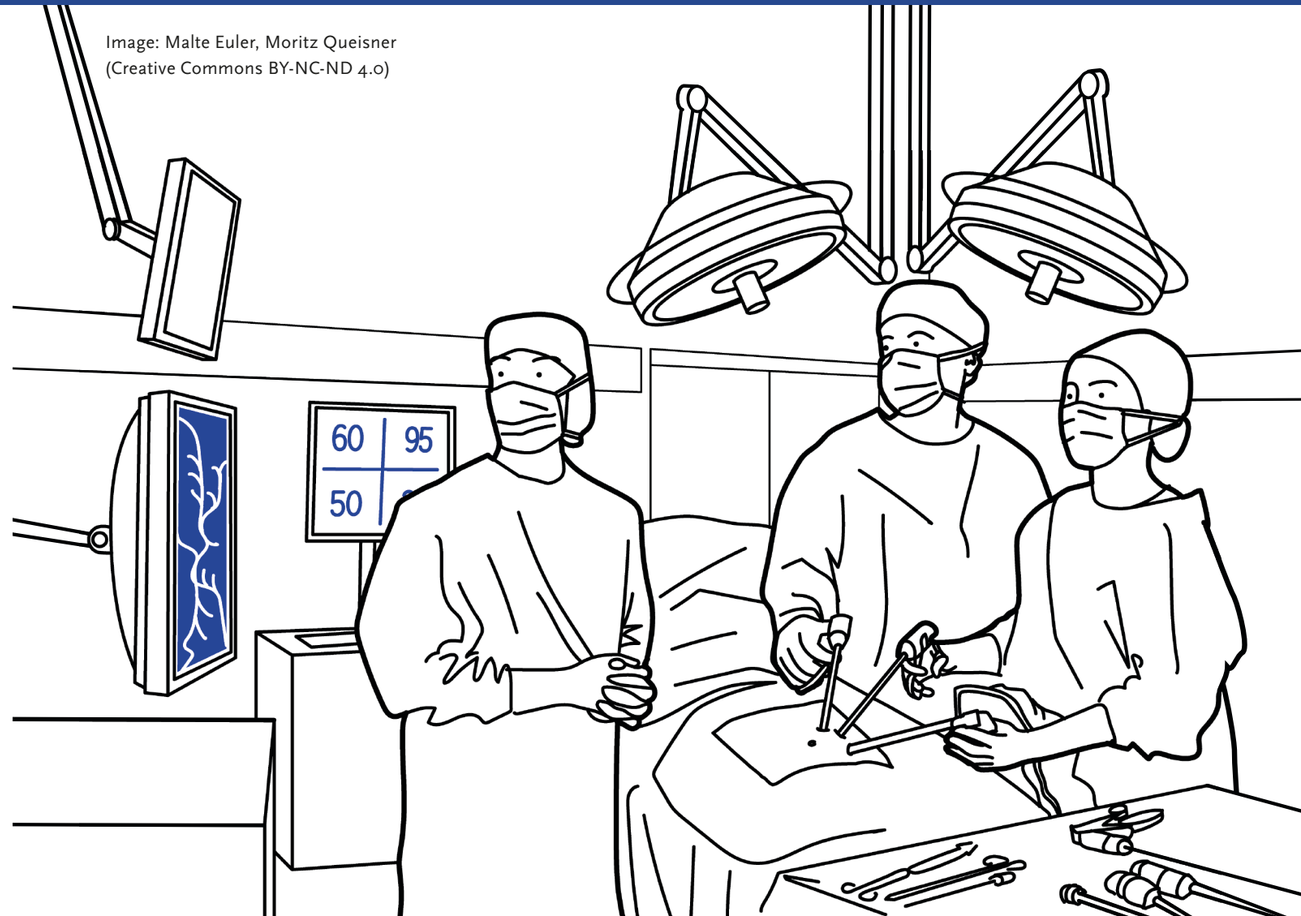
From professional environments to entertainment and everyday life, multiple forms and configurations of screens pervade and influence interaction. Image media and operations are linked in applications such as graphical user interfaces, touchscreens or augmented reality applications, turning the viewer first and foremost into a user. Screen users are today confronted with a multiplicity of imaging processes and visual representations that present them with the challenge of how to integrate a complex ensemble of image techniques and information into their action routines and working processes.

That the technologisation and mobilisation of image production generates new media and practices of visualisation is by no means new. The history and practice of visual media is fundamentally linked to their incursion into the realms of the invisible. They represent forms of visual knowledge and visual experience that can no longer be conceptualised with the body and the senses as the perceptual point of reference. Corresponding parameters of visibility such as motion, radiation and enlargement have been extensively discussed in photographic and cinematic theories of the technical image. The question that arises from the linking of screen and operation is less what is visible, or what can be seen, but rather how the interaction with and through screens structures action and perception.

A media critique of the screen must therefore not only differentiate between modalities of visibility and uncover the associated visualisation techniques, but also examine the merging of body and device as well as the technological and pragmatic conditions for visual and operative action. If we consider screen-based visualisations as the central interface between, for instance, surgeon and patient in medical image-guided interventions such as robotic surgery, we can explore architectures of screens, lines of sight, the hardware and software of image-guided operations and the 'blind spots' in workflows that screens create. Whereas military surveillance images or medical planning images, for example, have long been separating the conditions of representation and action both spatially and temporally, more recent screen technologies and forms of interaction synchronize image and action.

This therefore calls for a specific application-oriented knowledge of image and action that includes the media conditions of production and reception. The screen user must not only be image-literate as an analyst or viewer; instead, s/he must also be able to perform operations in cooperation with screen-based representations and instruments. This constitutes nothing less than a fundamental intervention into human actors' authority, autonomy, workflows and decision-making processes.

What are the specific conditions and possibilities of operation that screens create in contexts such as medicine, gaming, navigation or warfare? How can we theoretically grasp the aesthetic, epistemic and operational modalities in which screens enable and define operations? And how can we get 'behind' the screen to trace the political, infrastructural and historical currents that seem to find a kind of common ground in screen operations?



Tristan Thielmann

Professor of Science and Technology Studies, University of Siegen

Displaying Displays: A Praxeological Analysis of Computer Screens

This paper argues that digital computing is sustainably organized by the agency of visual displays. A praxeological analysis based on Harold Garfinkels »net-work theory« reveals that the operability of the first programmable digital general-purpose computers is based on three properties that are characteristic of computing today: the non-representational, public and discrete nature of computer screens. This means that something can be read off the display that wasn't originally intended. The first digital computer display targets the comprehensible representation of digit positions rather than the readability of digital numbers. Its purpose is not the semantic interpretation of primary information; its importance is constituted at the level of secondary information, through which a praxeological path structure is revealed. These three praxeological characteristics mean that the technical constitution of the first computer displays is designed for the user's structural incorporation. The first digital computers already have properties that we ascribe to social media today.

Lasse Scherffig

Assistant Professor of Art and Technology, San Francisco Art Institute

From Action Capture to Interaction Gestalt

When the first interactive computer was built at MIT it raised two difficult problems: How can digital data become visible to a human viewer, and how can a viewer's reaction to that data become »visible« to the computer? Both problems were originally addressed by the light-gun: A combination of cathode ray tube and light-sensitive electronics, allowing the act of pointing at a visual representation to become effective in a computational context. However, with this completion of a feedback-loop between representation and action, the visibility of what is represented on screen became subject to interactions between motor activity and visual perception: an effect experimentally studied as »action capture.« Because of it, we have to consider the subjectively experienced form or »Gestalt« of interactive representation as ultimately shaped by user action. In this sense, interfaces are caused by interaction.

Pasi Väliaho

Reader in Film and Screen Studies, Goldsmiths, University of London

Projection and Empire: Notes on Robert Hooke‹s Picture Box and Other Operational Images

On December 19, 1694, old and eminent British natural philosopher Robert Hooke presented a paper to the Royal Society of London, on »An Instrument of Use to take the Draught, or Picture of any Thing.« Hooke's invention was basically a portable camera obscura, yet unconventional in both its design and intended uses. This paper investigates how Hooke's picture box connected the projection of images as well as the gestures of sketching with the British Empire's epistemic and economic conquest over the globe. What was crucial was the operational role assigned to the camera obscura screen in this context of early colonialism. Furthermore, the paper focuses on the conceptual connections that Hooke‹s camera obscura made between the projection of images and the ideas of possession and property. In this regard, Hooke's invention, even if merely a detail in historical record, can be considered critical to the genealogy of today's visual culture, especially of the operational imagery that fuels contemporary resource wars.

Moritz Queisner

Research Associate, Cluster of Excellence Image Knowledge Gestaltung, Humboldt-Universität zu Berlin

Medical Screen Operations. How Head-Mounted Displays Transform Action and Perception in Surgical Practice

Based on case studies in minimally invasive surgery, this paper investigates how head-mounted displays (HMDs) transform action and perception in the operating theater. In particular, it discusses the methods and addresses the obstacles that are linked to the attempt to eliminate the divide between vision and visualization by augmenting the surgeon's field of view with images. Firstly, it analyzes how HMDs change the way images are integrated into the surgical workflow by looking at the modalities of image production, transmission, and reception of HMDs. Secondly, it examines how HMDs change where and in which situations images are used by looking at screen architectures in minimally invasive surgery. Thirdly, it discusses the impact of HMD-based practice on action and decision-making, by examining how HMDs challenge the existing techniques and routines of surgical practice and, therefore, call for a new type of image and application-based expertise.

Carolin Höfler

Professor of Design Theory and Design Research, TH Köln – University of Applied Sciences

Recoding the History: Parametric Modeling in Time Loops

According to a traditional understanding of architectural design, the design process advances in a chain of individual modeling stages from the largest to the smallest scale – the scale of 1:1 as the final model space. By means of computational design and rapid prototyping, it is now possible to skip different stages in the scale modeling process and to directly progress from the initial parameters to the 1:1 model. Information technology allows for the design information to be formalized in a digital chain, to be forwarded, transformed and turned into a NC code that directs a rapid prototyping machine so that the plans need not be constantly redrawn and questioned, verified or adjusted. Given these profound changes, the crisis of modern authorship, based on the repeal of the Albertian principle of separation between notation and construction, has been repeatedly proclaimed. In this debate, however, the effects of dynamization and destabilization of the design process by parametric modeling have been quite underexposed. After the process of generating, logical links between geometrical elements still retain so that a model's evolutionary history is recorded and represented in graphic form with the designer being able to always track this process and to change prior decisions. All steps taken in the modeling can subsequently be updated. The lecture will explore the consequences of modeling with parameters and variables, design iterations, feedback loops and multiple solutions for architectural design and process participants.

Jan Distelmeyer

Professor of History and Theory of Technical Media, University of Applied Sciences and University Potsdam

Effective Orders. Interfaces and Digitalicity

The much-noticed ubiquitousness of computing is also a commanding presence of Graphical User Interfaces. Since these interfaces are not only tools or mere preparations of presentations but meaningful and literally effective presentations themselves, this paper proposes to analyze them as »operative images«, a concept introduced by Harun Farocki. By delivering a sort of signs combining iconic as well as symbolic and (even more important) indexical qualities, these operative images sketch out and perform interrelated concepts of both: »the user« and »the computer«. From this follows the importance of analyzing popular interfaces as a special kind of staging – as an interface-mise-en-scène »depresenting« the work of computers and our relations to them as well as interrelating with widespread promises and fears of »the digital«/digitalicity. Motivated by the interest in popular phenomena, the Graphical User Interface of YouTube will be taken here as an example.

Hamid Ekbia

Professor of Informatics, Cognitive Science and International Studies, Director of the Center for Research on Mediated Interaction, Indiana University Bloomington

The Refracting Interface: Autonomy, Opacity, and Responsibility

The modern interface has turned into a ubiquitous mediator in human affairs. A growing discourse portrays these mediations as symmetric interactions between autonomous machines and individuals. The constitution of the interface, however, provides a more complex picture, where individual agency is diffused in boundless networks that tend to undermine autonomy. The opaque interface hides, but does not eliminate, this diffused agency. In this fashion, the tension between individual autonomy and network heteronomy plays itself out on the screen that refracts rather than resolve it. Using the case of armed drones, I examine the implications of this tension, with a focus on accountability and the attribution of responsibility.

Nina Franz

PhD candidate (funded by the Gerda Henkel Foundation), Institute for Cultural History and Theory and Cluster of Excellence Image Knowledge Gestaltung, Humboldt-Universität zu Berlin

Synthetic Vision. Screen-Based Practices in Remote Warfare

A new generation of control stations is set to transform the screen-based practice of remote-controlled warfare: Synthetic vision applications such as real-time video simulations and »augmented« images will effectively replace the camera image as the primary source of information for operators of the most frequently deployed armed drone systems, Predator and Reaper. In light of the current discourse about drones, this further »synchronization of image and action« demands a reconsideration of some basic assumptions about the role of the operators within these technological assemblages. In order to get »behind the screen« of these practices, it is necessary to look at them not only terms of a theoretical paradigm of simulation as a professed »loss of the real«, but at the politics and silent shifts in responsibility that lay behind them.

Kathrin Friedrich

Research Associate, Cluster of Excellence Image Knowledge Gestaltung, Humboldt-Universität zu Berlin

›Hanging Protocols‹ – A Brief Media Archaeology of Radiological Screens

Screens are a fundamental prerequisite for radiological diagnostics and hence therapeutical intervention. In the course of the so-called analogue-to-digital migration, the procedure of ›hanging‹ radiographical images, i.e. displaying them in a certain order, has undergone a transformation from employing light boxes into graphical user interfaces on workstations. In particular, modes of interacting with images as well as infrastructures of distribution have been significantly changed. By focusing on the relationship between screens and instruments as well as on changing affordances for users, the paper traces the transformations in the dispositive of radiological diagnostics and the effects on the operational and epistemological conditions of ›screening‹ patients.

Aud Sissel Hoel

Marie Skłodowska-Curie Fellow, Humboldt-Universität zu Berlin and Professor of Media Studies and Visual Culture, Norwegian University of Science and Technology, Trondheim

Theorizing and Analyzing Surgical Screen Operations: The Case of Preoperative nTMS

To an increasing extent, contemporary surgical practice can be characterized in terms of screen operations. In the surgical context, screens are not isolated display devices to be looked at. Rather, they form part of hybrid and multimodal dispositives that discipline bodies (the surgeon-body just as much as the patient-body), instruct vision and shape action. Surgical image and screen technologies – including those that are referred to as non-invasive – are entangled with bodies in ways that cannot be adequately accounted for by established models of thinking about media and instruments. How are we to make sense of them? And more importantly still: How are we to go about analyzing the shaping powers of specific surgical dispositives? In this presentation I will have a go at these questions, taking my point of departure from the current use of navigated transcranial magnetic stimulation (nTMS) in preoperative planning.