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Design [Research] Practices

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Design [Research] Practices

The Idea of this publication is to identify and examine several design research practices and to make a catalogue of them by categorising them and attaching keywords to them.

You will find contributions by various MA students of Köln International School of Design.

All articles are structured and organised by their correlating category. You will find articles in the categories *Creating*, *Gathering information*, *Iterating* and *Observing*.

There is also an interactive map of all contributions that you can find at:

<https://cutt.ly/designresearchpractices>

Creating

Creating

modeling

transforming, visualizing,
contextualizing, understanding,
convincing, seducing

Anastasia Bondar

Modeling as a design research practice in the context of information gathering and data collection can be characterized as a practice which aims to make information tangible. When modeling, information is being transformed. Aspects are reorganized, simplified and given another shape. Due to this transformation aspects might be added or left out. One could say that a model makes the object it depicts clearer, easier to understand and / or gives it sharp edges.

A model cannot replicate nor copy an object or information. It is always a transformation. That is what distinguishes it from the object it wants to depict. Models also bear intention. The object itself is free from these intentions, it simply exists. There are various purposes, which models try to serve. Intentions of modelling range from making information more accessible and structured to being able to present them and finally to convince others.

Yet modeling helps to understand complex realities which can lead to a seductive illusion of a holistic representation. Following the *General Model Theory* of Herbert Stachowiak, a model has inherent properties which it's referent never had. Being graspable and adjustable in scale as well as providing advice for thinking and acting. Thus, models reflect the inevitable process of biased transformation which rather depicts modeled interests than representing the reflected object.

How can we resist and stop ourselves to simply believe the illusion models can create? What does this mean for designers and their modeling practice? Is it even possible to create a model without misusing information?

Whether modeling with good intention or not, models are created with an interest and adjust the depicted information. It is important to be aware of their subjective nature and take this into account when using modeling as a design practice. To end with an example: This text as well is of course biased, subjective and filtered – as there is a lot more to modeling, it's meaning and effects

1 Reinhard Wandler: "Big Data and the Technical Images of Scenario Modeling", in: Nikola Doll, Horst Bredekamp, Wolfgang Schäffner (Hrsg.): *+ultra. knowledge & gestaltung, Exh.cat.*, Berlin, Martin-Gropius-Bau. Leipzig: Seemann Henschel 2017, p. 307–314.

Creating

publishing

knowledge production,
experimenting, analog & digital
interdisciplinary, collaboration,
science, research

Bessie Normand

Publishing is an important design practice for communicating and generating knowledge and information.

Established structures have long dictated subject-specific publications in traditional — usually conservative — formats. For example, a book is published by a well-known publishing house.

In the age of digitalization and the Internet, alternative and independent formats of knowledge transfer are increasingly developing. Hybrid formats are being developed that combine the best of the analogue and digital worlds of publishing. Classical print products are being expanded in a multimedia way with the help of augmented reality apps, for example with videos, animations or 3-D models. The flow of reading remains unbroken. “Audio walks” integrate research results directly into the environment and make them tangible. Blog platforms with a good concept develop into serious sources. Websites, databases, software or exhibition installations are designed.

The potential of electronic publishing on desktop devices and mobile devices such as tablets or e-book readers should be explored further, as these are currently still strongly oriented towards classic print products. Nevertheless, an innovative strategy does not have to be invented in every case. The choice of the medium and the resulting concept is based on the object of research and the target group. The form should never put the content in the background but rather emphasize it.

In addition, unconventional publication channels also lead to new types of scientific exchange. On the one hand, authors and designers cooperate already during the research and design process, which leads to publications which combine results and project work in equal measure. On the other hand, specialists from different disciplines and cultures collaborate in an experimental way to stimulate and link unusual thought processes. At the same time there is the possibility to reach an interdisciplinary audience.

Publizieren ist eine wichtige Designpraktik, um Wissen und Informationen zu kommunizieren und zu generieren.

Etablierte Strukturen diktieren lange Zeit fachspezifische Veröffentlichungen in traditionellen – meist konservativen – Publikationsformaten. Ein Buch wird beispielsweise in einem bekannten Verlag herausgegeben.

Im Zeitalter der Digitalisierung und des Internets entwickeln sich zunehmend alternative und unabhängige Formate der Wissensvermittlung. Hybride Formate werden entwickelt, die das Beste aus der analogen und digitalen Welt des Publizieren vereinen. Klassische Printprodukte werden multimedial erweitert mit Hilfe von Augmented-Reality-Apps, beispielsweise durch Videos, Animationen oder 3-D Modellen. Der Lesefluss bleibt dadurch ungebrochen. „Audio-walks“ integrieren Forschungsergebnisse direkt in die Umgebung und machen sie erfahrbar. Blogplattformen entwickeln sich mit gutem Konzept zu seriösen Quellen. Webseiten, Datenbanken, Software oder Ausstellungsinstallationen werden konzipiert.

Das Potenzial des elektronischen Publizieren auf Desktopgeräten und mobilen Endgeräten, wie Tablets oder E-book-Readern sollte noch weiter erkundet werden, da diese sich derzeit noch stark an klassischen Printprodukten orientieren. Dennoch muss nicht in jedem Fall eine innovative Strategie erfunden werden. Die Wahl des Mediums und daraus resultierenden Konzepts beruht auf dem Forschungsgegenstands und der Zielgruppe. Die Form sollte niemals den Inhalt in den Hintergrund stellen sondern unterstreichen.

Zusätzlich führen unkonventionelle Publikationskanäle auch zu neuen Arten des wissenschaftlichen Austausches. Zum einen kooperieren AutorInnen und GestalterInnen schon während des Forschungs- und Entwurfsprozess. Prozesspublikationen vereinen Ergebnisse und Projektarbeit gleichermaßen. Zum anderen kollaborieren Spezialistinnen unterschiedlicher Disziplinen und Kulturen auf experimentelle Weise, um ungewöhnliche Denkprozesse anzuregen und zu verknüpfen. Gleichzeitig besteht die Möglichkeit ein fächerübergreifendes Publikum zu erreichen.

Creating

Photogrammetry

pictures, reconstruction, Virtual Reality,
testimony, smartphone

Ayako Matsuda

Photogrammetry is a research practice developed to extract geometric information from 2D pictures about objects or environment. As photography, photogrammetry has evolved over time. It went from analog, which used optic-mechanical instruments, to digital. Nowadays, its use and applications became more accessible through specific software. The spreading and development of them have reached the point where a collection of amateur pictures can be turned into a precise and navigable 3D model. Moreover, it's become affordable and popular because people can use their smartphones as equipment.

The digital reconstruction enables users to analyze a certain object or situation without having to be physically on the site. This advantage is widely explored by Forensic Architecture to investigate politically motivated crimes against human rights such as the invasion of the terrorist group known as ISIL in Northern Iraq to persecute the Yazidis social minority (2014), or the use of chemical weapons by the Syrian government (2017).

The methodology played a main role in the investigation project *The Beating of Faisal Al-Natshah* (2014). In this project, contributors used pictures taken by witnesses to reconstruct the environment where a Palestinian man was severely assaulted during the Israeli army occupation in the city of Hebron.

Visiting the site was out of question because of ethnic segregation, so the Forensic Architecture team used Virtual Reality (VR) created from the results of photogrammetry to collect testimonies. Relying exclusively on memory could lead to a long way to understand the facts. The trauma of the event creates obstacles for witnesses to access their memory and give a precise statement. After walking inside the 3D model, three Palestinians were able to remember the details of the physical assault they had seen.

Photogrammetry has proved to be a valuable tool that helps users overcome barriers such as time, location, or trauma. These advantages will continue to push its spread among the general public.

THE BEATING OF FAISAL AL-NATSHEH, in *Forensic Architecture* <https://forensic-architecture.org/investigation/the-beating-of-faisal-al-natsheh> [25 April 2020]

CHEMICAL ATTACK IN KHAN SHEIKHOUN, in *Forensic Architecture* <https://forensic-architecture.org/investigation/chemical-attack-in-khan-sheikhoun> [26 April 2020]

THE DESTRUCTION OF YAZIDI CULTURAL HERITAGE , in *Forensic Architecture* <https://forensic-architecture.org/investigation/the-destruction-of-yazidi-cultural-heritage> [26 April 2020]

Eyal Weizman: "Introduction: Forensis", in: Forensic Architecture (ed.): *Forensis: The Architecture of Public Truth*, Berlin: Sternberg Press, 2014, pp. 9–32.

Karl Kraus, Introduction in: *Photogrammetry (2 ed.): Geometry from Images and Laser Scans*, Berlin · New York: Walter de Gruyter, 2004 pp. 1–3.

Wilfried Linder, Preface 1st Edition in: *Digital Photogrammetry: A Practical Course*. Berlin: Springer-Verlag Berlin Heidelberg, 2009 pp. 5–6.

creating

believable
composing

linked, accuracy, interpretation, source,
structure

Christopher Müller

Believable Composing

How to link more than one information to create a deeper picture? Composing might not have been the first pick for a method to research in general. It is in a need for further explanation. To simply explain this design research practice it is to say, that composing is a connection of different parts to one. The importance is hidden between the information or the highlights. There are many reasons to properly connect your sources, information, structures, and so on. The key is to create an understandable formation to not lose the audience or your own path. The composing needs to allow the onlooker to send thoughts on a directed journey, which leads to a relationship between many different media.

In times of Big Data, there is an overload of information available. This information doesn't just need to be collected and provided. More likely it has to be prepared in a clever structure to provide a broader view of things. This connection could be misleading or even ruining the end results of whole projects if done wrongly.

Informational details could be for example arranged (composed) in visuals to rightfully elucidate different facts, that are placed in one technical model. These models create a huge room for interpretation when the informational links aren't prepared in a composed form. A phoneme is that there is a tendency for creating opinions that suit own needs and believes the best, (You see what you want to see). In the text: „Big Data and the Technical Images of Scenario Modeling“ (2016) from Reinhard Wendler these phenomena are compared to the picture of a spiritual glass ball that tells you your fortune. A context is needed to fit in material to control interpretation, to guarantee a true picture or answer to a given situation.

¹ Reinhard Wendler: "Big Data and the Technical Images of Scenario Modeling", in: Nikola Doll, Horst Bredekamp, Wolfgang Schäffner (Hrsg.): *+ultra. knowledge & gestaltung, Exh.cat.*, Berlin, Martin-Gropius-Bau. Leipzig: Seemann Henschel 2017, p. 307–314.

creating

thoughtful
constructing

data anatomy, question, answer,
neutral way, personal opinion

Christopher Müller

Thoughtful Constructing

Is Big Data destroying our known system of questioning and answering? At this point in time, most of the asked questions have been already answered. Those answers were piled up, listed, and placed when needed. One aspect of: „Big Data and the Technical Images of Scenario Modeling”(2016) is the explanation of idealized process of a Big Data scenario: interest in learning—information gathering—evaluation. But does a perfectly accurate evaluation provide an answer to a complex or personal question?

We have to agree on the necessity of thoughtfully constructed data sources to provide real-life answers to real-life problems. Big data has the image of being a neutral way to construct an opinion. But data connection could distort the whole system and stere towards one particular direction if needed. This is possible when the right data sources are connected and others left out. This system doesn't just appear in Data anatomy, more likely it is easier to spot in more common diagrams, infographics, or other statistics. It is important to clarify your intentions. A superficial or even wrongly intentioned construction could course serious misunderstandings or false information.

The ideal goal should be constructed in a way, which doesn't confuse the audience, to not blur the bigger picture or to complicate facts. At all times there should be the guarantee that a correct picture of our current time is formed, that represents us (humans and our world), in the way we are.

¹ Reinhard Wendler: "Big Data and the Technical Images of Scenario Modeling", in: Nikola Doll, Horst Bredekamp, Wolfgang Schäffner (Hrsg.): +ultra. knowledge & gestaltung, Exh.cat., Berlin, Martin-Gropius-Bau. Leipzig: Seemann Henschel 2017, p. 307–314.

Creating

synthesizing

generating, simulating, immitating,
reproducing, curating, tracing

Laura Wagner

Synthesis is the process in which individual elements are combined to form a new, more complex entity. Synthesizing as a method applies the process of synthesis to reproduce or imitate phenomena or entities that occur in nature. Chemically produced aromas, as used in industry, always have a natural aroma as an archetype, the most widely used aroma substance in industry, with the chemically synthesized lemon fragrance citral being an example. The electronic recreation of the sound of various musical instruments by a synthesizer and the generation of audio signals or speech, is another example of synthesizing. With increasing computing power of (graphic,-) processors it is possible to simulate and recreate various phenomena from the physical world. The incentive to reproduce nature and the behaviour of matter in a virtual environment makes expensive calculations necessary. Fluid simulations, which take into account physical properties such as viscosity, help to reliably simulate the natural behaviour of fluid matter, which is used in research and development. Raytracing - the calculation of the behaviour of light rays - enables the creation of realistic images of nature as well as the reproduction of phenomena such as refractive caustics or chromatic aberration, which result from the interaction of light and matter. For example, finite element simulations can identify predetermined breaking points of objects and provide information on how an object is deformed or shattered under certain conditions. Synthesis as a research method in design makes it possible to generate Media content procedurally and subsequently evaluate by further research methods such as triage. The synthesis also makes it possible to include things in the design process that would otherwise be too expensive, unobtainable or simply not feasible, for example depicting a live tiger in a scene or simulate the destruction an atom bomb would cause.

Creating

intersecting

between, critical, questioning,
reflective, non linear, challenging,
connecting

Lisa Marleen Mantel

In this design research practice, different disciplines are intersecting to question each other. As a medium serves the connection or the “*between*” itself.

In Jane Rendell’s paper “*A Place Between, Art, Architecture and Critical Theory*”¹ she describes two different forms of intersected practices. The practice of working multidisciplinary, in which diverse practices are present. They maintain their own identities while questioning each other in the ways of working. On the contrary, the practice of working interdisciplinary, which describes a transformative and reflective way of working which is creative and critical.

As an example of multidisciplinary practice, Rendell refers to a request to design an architectural exhibition. Instead of only describing the work of famous architects, she decided to ask academics from outside of architecture to provide a short narrative about a specific place in the city and an object related to that space. The title of the project was “*Strangely familiar*” because a known place should be described in a new way. As a result, the ideas of different authors were placed next to each other around the same topic, which created a “*between*”.

In Rendell’s Ph.D. program “*Architectural design*” she asks her students to combine theory, which she defines as critical theory, and practice. This interdisciplinary way of working creates a non-linear relationship between both disciplines, which is challenging in terms of thinking critically and design creative propositions at the same time. Diving into another discipline allows to see things differently and opens many connections between disciplines.

In summary multidisciplinary teams and interdisciplinary ways of working are research methods that stimulate new ideas and concepts through intersecting areas of expertise and interconnecting them. Known processes and workflows are being questioned which leads to a new area of study often located at the meeting point in between.

1 Jane Rendell: “*A Place Between Art, Architecture and Critical Theory*”, in: Proceedings to Place and Location, Tallinn/Estonia, 2003, pp. 221–233.

In dieser Design-Forschungspraxis überschneiden sich verschiedene Disziplinen und stellen sich gegenseitig in Frage. Als Medium dient die Verbindung oder das *“Zwischendrin”* selbst.

In Jane Rendell's Arbeit *“A Place Between, Art, Architecture and Critical Theory”*¹ beschreibt sie zwei verschiedene Formen der überschneidenden Praxis. Die Praxis des multidisziplinären Arbeitens, bei welcher verschiedene Arbeitsweisen vorhanden sind und ihre eigene Identität beibehalten, während sie sich gegenseitig in Frage stellen. Im Gegensatz dazu, die Praxis des interdisziplinären Arbeitens, welche eine transformative, reflektierende Arbeitsweise beschreibt, die kreativ und kritisch zugleich ist.

Als Beispiel einer multidisziplinären Praxis bezieht sich Rendell auf einen Auftrag, eine Architekturausstellung zu gestalten. Anstatt ausschließlich die Arbeiten bekannter Architekten darzustellen, bittet sie Akademiker außerhalb der Architektur, über einen bestimmten Ort in der Stadt zu berichten. Dieser sollte in Verbindung mit einem Objekt stehen. Der Titel des Projektes ist *“Strangely familiar”*, da der bekannte Ort auf eine neue Weise beschrieben werden sollte. Als Ergebnis wurden die Arbeiten verschiedenster Autoren zu derselben Thematik nebeneinander platziert, wodurch ein *“Zwischendrin”* entstand.

In Rendell's Ph.D.-Programm *“Architectural design”* fordert sie ihre Studenten dazu auf, Theorie, welche sie als kritische Theorie definiert, und Praxis zu verbinden. Dieses interdisziplinäre Arbeiten erzeugt eine nicht-lineare Beziehung zwischen beiden Disziplinen. Die Herausforderung besteht darin, kritisch zu Denken und zugleich kreative Vorschläge zu gestalten. Das eintauchen in eine andere Disziplin, ermöglicht es, Gegebenheiten auf andere Art und Weise zu sehen und zeigt viele Verbindungen zwischen den Disziplinen auf.

Zusammenfassend sind multidisziplinäre Teams und interdisziplinäre Arbeitsweisen Forschungspraxen, welche zu neuen Ideen und Konzepten, durch sich überschneidende Wissensbereiche, anregen und diese miteinander verknüpfen. Bekannte Prozesse und Arbeitsabläufe werden in Frage gestellt, was zu einem neuen Forschungsfeld führt, welches sich oft im Zustand zwischendrin befindet.

1 Jane Rendell: *“A Place Between Art, Architecture and Critical Theory”*, in: *Proceedings to Place and Location*, Tallinn/Estonia, 2003, pp. 221–233.

Creating

adapting

evolutionary optimization, integration,
organism, parameter, machine,
adaptive material

Marcela Mity Costa

Generative design is a methodology based on the theory of evolutionary optimization observed in nature. This theory was developed in 19th century and is no longer supported by new thoughts of scientists. However, this theory was very important to develop procedures that gave rise to generative design. Today, this technique is applied from the exploration of computer programs and machines and includes adaptive materials that respond to different interactions. The vision that drives this design practice is the generation of a product/architecture that evolves in reaction to the environment and the needs of humans in an integrated manner such as a living organism.

This practice design works from the “genetic algorithm” that defines the general characteristics of a project. When the algorithm is modified, the entire result is affected reflecting the integration of the elements within that organism. In this process, the algorithm is determined by a series of parameters that codify important characteristics such as the project requirements, the client’s demands, and the environment requisites.

In addition to the genetic algorithm, depending on the complexity of the project, there are a large number of variants. In the design process, the machine is programmed to reduce variants in a mechanism that mimics “natural selection” to achieve the ideal result. These variants are usually selected according to the designer’s functional and aesthetic criteria.

The notion of nature characterized by optimization was developed according to industrial progress and the functionalist mentality of the 19th century. Unlike the generative design process, natural organisms are historically determined and their improvement is the result of past restrictions that formed structures capable of adapting to new functions, without necessarily offering the best prerequisites for this evolution. Although today’s scientists no longer support the theory of evolutionarily optimized organisms, generative design is a practice that finds technological progress and material innovation a field to develop.

Katharina Lee Chichester: “Evolution and the Design Process: The Myth of Optimization”, in: Nikola Doll, Horst Bredekamp, Wolfgang Schäffner (eds.): *+ultra: knowledge & gestaltung, Exh.cat.*, Berlin, Martin-Gropius-Bau. Leipzig: Seemann Henschel 2017, pp. 81–87.

creating, iterating

experimental programming

proactive, human-centred,
making things

Jakob Plöns

“The scientist builds in order to study; the engineer studies in order to build.”

Frederick P. Brooks

Information technology has been a very strict and disciplined science for a long time. Having its origin within the fields of mathematics, the dominating concept was and still is in parts the making of things, the efficiency of an algorithm, usually having clear yes-and-no answers, and providing error-free software systems. Often, information technology isn't referred to as science but as craft, especially from an engineers' perspective. Therefore, experiments—traditionally at the centre of sciences by evaluating presented hypotheses—are not necessarily a part of information technology and its research.

In recent years though, the human-computer interaction (HCI) has gained a lot attraction and interests, and shifted the informatics' perspective quite drastically. Nowadays, software is not only made with the interest of best computing performance in mind; the user and its experience using an application are not only part of the development process itself, but often the starting point for concepts of new software. A system no longer consists solely of software, but also takes the usage into account. And because HCI is deeply influenced by cognitive sciences and psychology, not only the working mechanisms of a machine are evaluated, but also the human behaviour.

Combining the “formal-logical information technologies” (Müller-Birn/Benjamin, p. 219) and the “phenomenologically-situated use cases” (ebd., p. 221) widens the field of informatics, and together with the increasingly important role of experiments within the field of information technology is extended by the research field of human-centred computing.

Claudia Müller-Birn/Jesse Josua Benjamin: “Programmieren: Zwischen Mensch und Technik. Das Experiment in der Informatik”, in Séverine Marguin/Henrike Rabe/Wolfgang Schäffner et al. (eds.): Experimentieren. Einblicke in Praktiken und Versuchsaufbauten zwischen Wissenschaft und Gestaltung, Berlin: Transcript 2019, pp. 215–255.

creating, observing

interacting

enaction, environment, experience

Jakob Plöns

“All doing is knowing and all knowing is doing.”

Humberto Maturana, Francisco Varela

In the context of design, interaction is usually referred to either one of two extremes: social interaction, which deals with the context of human-centred action-reaction-subjects, and technological interaction, which most often means speaking about soft- or hardware interfaces. Both extremes include humans—either as main actor or as ‚subject‘—but refer to a dated understanding of interaction, which more often gives technology a superior role and relate to a traditional thinking of human-machine-interaction.

To perceive interaction as its own field of research, and not as another part of technology development, one needs to move the focus to a relational understanding of interaction: it is not describing the relationship between human(s) and technology, but the relationship—more often the aesthetic-political—between several agencies, human and non-human entities. This understanding builds upon the theories of enactivism and embodiment (or embodied knowledge): by interacting with the environment, one can learn and build up knowledge; the permanent inputs an agency perceives are directly influencing the outputs this agency performs, and vice versa. In cognitive science, the term sensorimotor is used to describe this phenomena, amongst others by Alva Noë and Kevin O’Regan.

Creating such interactive research situations is a hybrid between laying foundations for actions without instructing or forcing them. They need to acknowledge the specific questioning, but cannot be predetermined to the last detail; they are always up to the new and unexpected about the agencies relationship. Such situations can not only be found in projects within the scientific context, but also in projects initially not designed for deep research, like the Zero-Th project Recycled Soundscapes from 2004, where soundscapes invite passengers to experience and modify the sounds of their environment.

Karmen Franinović: “Interagieren/Inter-aktion”, in: Jens Badura/Selma Dubach/Anke Haarmann et al. (eds.): *Künstlerische Forschung. Ein Handbuch*, Zürich: Diaphanes 2015, p. 161–164.

Humberto Maturana, Francisco Varela: *Der Baum der Erkenntnis. Die biologischen Wurzeln menschlichen Erkennens*, Frankfurt am Main: Fischer Taschenbuch Verlag 2015, p. 27.

Alva Noë, J. Kevin O’Regan: *What it is like to see. A sensorimotor theory of perceptual experience*, manuscript submitted to *Synthese* 2000, <http://nivea.psycho.univ-paris5.fr/Synthese/MyinFinal.html>

creating

collaborating

cooperating, integrating, combination,
linking, mixed methods, interdisciplin-
arity

Lucca Sophie Weigert

Collaboration is the cooperation among different persons, groups or organizations, that work together in order to complete a certain task. From a historical perspective, the term collaboration originally referred to a traitorous cooperation with the enemy, which in most cases meant the opposing or occupying power in war. In the design context, working with the enemy could in a figurative sense be understood as working with foreign departments as well as integrating and linking partially contradictory or unusual methods.

Collaborating includes a multitude of possible combinations of different working techniques and research methods that favor the acquisition of knowledge. The boundaries between different design fields seem to be merging more and more, so that collaboration in the sense of a mixed methods approach is essential and mostly immanent in the design process. The collaboration can take place between people from close related or distant departments. Also it can refer to the linking and integration of different working and research methods. The combination of elements from opposing disciplines is often particularly interesting.

Collaborating can at the same time be understood as the answer and cause for fields of work that seem to become ever more fluid and infinite. Creative fields of activity in particular seem to merge into one single category and at the same time they do gain importance in many foreign areas of expertise, so that collaborating is becoming ever more indispensable.

Gathering information

Gathering information

wild gathering

searching, (un)intentional collecting,
discovering the unknown, piling up,
learning

Anastasia Bondar

There is not necessarily a “why” when utilizing the practice of wild data gathering. The pure interest in learning can be the starting point. It can be driven by the human wish to discover the unknown. Gathering information can on the one hand happen completely unintentional – just for the sake of gathering information. This can be the case with big data. Data that is gathered for the sake of collecting masses of information which can become difficult to handle. On the other hand, data can also be collected with a specific intention or interest.

At one stage the need to make sense of the collected data occurs. Then a “why” could be defined. It might become clear that not the desired, interesting information had been gathered. Or that it stands in complex co-relation to other data and cannot be separated as easily. Here the “how” comes into play. In a digital context “data mining”, the search within a mountain of piled up data masses for valuable and relevant information, requires algorithms and computational capacities. They are crucial in order to try to separate the relevant from the irrelevant.

Data processing capacities are confronted with limitations: volume, variety and velocity. Yet these capacities grow exponentially which reverses the structure of being interested in learning and therefore gathering information. Wild gathering in contrary uses new computational capacities to collect data and tries to make sense of them later.

The question or process how to handle the collected information strongly differs from the wild gathering process itself. Completely different needs and standards are essential here – whereas there might not even have been standards in the previous step. It is then crucial to ask the right questions in order to evaluate the given information with practices like modeling.

1 Reinhard Wendler: “Big Data and the Technical Images of Scenario Modeling“, in: Nikola Doll, Horst Bredekamp, Wolfgang Schäffner (Hrsg.): *+ultra. knowledge & gestaltung, Exh.cat.*, Berlin, Martin-Gropius-Bau. Leipzig: Seemann Henschel 2017, p. 307–314.

Gathering Information, iterating

Reenacting

replicate, compare, evidence, police,
forensics

Ayako Matsuda

Reenactment is a research practice that has been commonly used by the police to make suspects replicate their actions and possibly support the confession of a crime.

This methodology emerges into various forms in investigations conducted by Forensic Architecture, a multidisciplinary research group engaged in defending human rights against politically motivated offenses. For example, in the project *Killing in Umm al-Hiran* (2019), reenactment was key to determine the movement of a victim's car and then clarify the real occurrence of events. FA's aim when applying reenactment is always to compare physical phenomena to digital simulation. The innovative approach provides international courts with new forms of evidence that disqualify claims from powerful authorities such as federal police or politicians.

In the project *The Murder of Halit Yozgat* (2006), the research group investigated the death of Halit Yozgat, one of the 10 murders committed by the neo-Nazi group National Socialist Underground (NSU) between 2000 and 2007 in Germany. The magnitude of this case has shocked the German population as later it exposed the constant contact that the neo-Nazi group had with the German security service.

After a massive leak of police archive of evidence on the case in 2015, the research group had the means to obtain decisive evidence for the case: the reenactment of a reenactment of the suspect and intelligence officer Andreas Temme. FA combined the methodology with 3D modeling, audio analysis, and fluid dynamics to conduct a series of experiments both in digital and 1:1-scale physical models. FA's approach proved that Temme's testimony was extremely unlikely to be true. However, seeing in the big picture, it revealed the country's remaining ties with its most obscure moments in history.

Eyal Weizman: "Introduction: Forensis", in: *Forensic Architecture* (ed.): *Forensis: The Architecture of Public Truth*, Berlin: Sternberg Press, 2014, pp. 9–32.

KILLING IN UMM AL-HIRAN, in *Forensic Architecture* <https://forensic-architecture.org/investigation/killing-in-umm-al-hiran> [26 April 2020]

THE MURDER OF HALIT YOZGAT, in *Forensic Architecture* <https://forensic-architecture.org/investigation/the-murder-of-halit-yozga> [26 April 2020]

Gathering Information

playfull
experimenting

Test procedure, practice, adaptation

Michael Barion

playfull experimenting

The borderline between fact and fiction provides plenty of room for playful experiments. The author Robert Matthias Erdbeer pursues in the text “Spielen. Ludic Intervention. Experiment and Gameplay”, pursues the thesis that logical procedures become brittle when people get into play.¹ Thus, experiments can be created through the principle of games to find out how players move through a world, behave and therefore slip into other roles.

During the act of playing or even taking a character to experiment, the player (*agent*) becomes the modeler of the game world (*paidia*) which is subject to a fixed framework structure, in that the possible and regular design and testing (*ludus*) is already fixed. That way, players have an experimental space that enables the function of an apparent free play. According to Erdbeer, this type of experimentation can be used to rehearse certain norms of action and behaviour, which can lead to a central point of a hermeneutic and critical attitude in the player.

In a so-called *Open World Game*, the player is given the apparent freedom to decide which path to take and is offered a possible psychological choice. Here a so-called “truth” is hidden, which is not conveyed through playful communication but which would like to be discovered after the *paidia*. In a test procedure, the behaviour of self-sufficient and autonomous behaviour can be challenged through a practice mode. The player is engaged in self-observation and reflection, which leads to a behavioural experiment. Leading critical failure with the game itself becomes an emotional and intensive learning experience, which stimulates the memory more and is therefore more likely to be stored by the player. The player acquires new experiences and gains the ability to find new solutions, which are acquired through game play.

¹ Robert M. Erdbeer: “Spielen. Ludische Intervention. Experiment und Gameplay”, in: Séverine Marguin/Henrike Rabe/Wolfgang Schäffner et al. (eds.): Experimentieren. Einblicke in Praktiken und Versuchsaufbauten zwischen Wissenschaft und Gestaltung, Berlin: Transcript 2019, pp. 309–322.

Gathering Information

making decisions

Test procedure, practice, adaptation

Michael Barion

making decisions

By defining the general conditions and the consequences taken from the evident reality, a place is opened up for the player which encourages playful decisions. Normally everything in a linear game is already pre-programmed by the written code, like paths or by the general fictional story. In the referenced game *The Stanley Parable* the player (*agent*) is put into a scenario by Stanley (*avatar*) that questions all decisions. He no longer sees any instructions that should appear on his screen. A distinctive voice describes Stanley's emotional state and guides him or the player through the office building. In doing so, the narrator terminates the intended path of the player and describes the bleak and monotonous work Stanley did in this office. Here it becomes clear that the player himself becomes an object of play and experiment. A reflection arises from the role of Stanley on the players. On the one hand, the moderator tells the paths the player has to take, but on the other hand, this leaves the option open that the player can also take a different choice than the given one. In this psychological consequence, the player is caught in a dilemma of reflection that demands a decision from him. Thus this game moves from a ludic (playful) independent video game to a serious game.

“The game is an unusual experiment of freedom and reality”¹

According to Erdbeer, what cannot be reduced is the so-called freedom, which is compensated in the game by the algorithms. The scheduled decision tree provides several possible paths, but the final decision that is made cannot be scheduled. This is a basic function in the game, a relationship of power to apparent freedom.

The paidia, i.e. free play, takes on a kind of cultural technique here, which can be examined sociologically through a field study to evaluate the behaviour for decisions. According to mathematical and psychological game theory, in order to evaluate decisions and incomplete logical procedures, the question of the choice of the correct cognitive model is important.

But which decision is ultimately made is not determined by the game. With two open doors, the player is faced with the question of what will happen when an action takes place. The decision itself is up to the player.

¹ Robert M. Erdbeer: “Spielen. Ludische Intervention. Experiment und Gameplay”, in: Séverine Marguin/Henrike Rabe/Wolfgang Schäffner et al. (eds.): *Experimentieren. Einblicke in Praktiken und Versuchsaufbauten zwischen Wissenschaft und Gestaltung*, Berlin: Transcript 2019, p. 312.

Gathering Information

strolling

in motion, imagination, change,
storytelling, series of prompts,
“no where”, beyond

Lisa Marleen Mantel

“*Being in the world*”, in the presence, being in motion – characterizations of this design research practice. Strolling allows connecting with the medium of a networked environment that is natural and cultural at the same time.

In her focused study “*Imagination is the Root of all Change*”¹ Jane Rendell describes the practice of information being told while strolling the city. By that, the information is connected immediately with the visited places. It allows to discover and create the environment at the same time.

“*Platform*”, a group of environmental artists, are leading tours along the River Fleet in London. The River was partly transformed into a canal system over the course of history. By using the practice of strolling, the tour reveals the reasons for and impact of this transformation. Past events and future imaginings are brought to the here and now which opens up a new way of imagination. And imagination, “*Platform*” says, is the root of all change.

Another example, also in London, is the “*Detour*” project by the artist Marysia Lewandowska. She tries to raise the passion for the “*every day*” on her tour through the Paddington Basin. Rather than showing monuments or historical facts, she focuses entirely on the ordinary facts all around us, which are being ignored and invisible otherwise. Visiting a storage warehouse, talking to the inhabitants of the estate about life – spatial stories which are connecting people and places.

The practice of strolling was already interesting to artists in the 1960s and 1970s. There is a kind of thinking that corresponds to walking as a creative practice. By moving and only passing, the external world operates as a series of prompts. These prompts connected are like storytelling in motion. Strolling is a journey, a moment of being “*nowhere*”. A way of knowing that refuses to be pinned down by existing conditions². This kind of thinking lets us imagine “*beyond*” and “*as if*”. That is important for emancipatory politics and the future.

1 Jane Rendell: “A Place Between Art, Architecture and Critical Theory”, in: Proceedings to Place and Location, Tallinn/Estonia, 2003, pp. 221–233.

2 Rosi Braidotti: “Nomadic Subjects” in: Embodiment and Sexual Difference in Contemporary Feminist Peory, Columbia University Press, New York, 1994

“Im Hier und Jetzt sein”, in der Gegenwart, in Bewegung – Charakteristiken dieser Design-Forschungspraxis. Flanieren ermöglicht eine Verbindung mit dem Medium der vernetzten Umgebung, welche ursprünglich und erschaffen zur gleichen Zeit ist.

In ihrer Fokusstudie “*Imagination is the Root of all Change*”¹ beschreibt Jane Rendell die Praxis der erzählerischen Informationsweitergabe, während man durch die Stadt schlendert. Dadurch werden Informationen direkt mit den besuchten Plätzen verbunden. Dies ermöglicht es, die Umgebung zur gleichen Zeit zu entdecken und zu erschaffen.

“*Platform*”, eine Gruppe von Umweltkünstlern, leiten Touren entlang des Flusses Fleet in London. Der Fluss wurde über den Verlauf der Geschichte teilweise in ein Kanalsystem umgewandelt. Unter Anwendung der Praxis des flancierens, deckt die Tour Gründe und Auswirkungen dieser Umwandlung auf. Vergangene Geschehen und die Vorstellungskraft zukünftiger Veränderungen, werden in das Hier und Jetzt gebracht, was eine neue Art der Fantasie ermöglicht. Und Fantasie, sagt “*Platform*”, ist der Anfang jeder Veränderung.

Ein weiteres Beispiel, ebenfalls in London, ist das “*Detour*”-Projekt der Künstlerin Marysia Lewandowska. Sie versucht auf ihren Touren durch das Paddington Basin eine Leidenschaft für das Alltägliche zu wecken. Anstatt Monumente und geschichtliche Fakten aufzuzeigen, fokussiert sie sich ausschließlich auf die gewöhnlichen Begebenheiten überall um uns herum, welche ansonsten ignoriert und unsichtbar bleiben. Ein Besuch in einem Lagerhaus, ein Gespräch über das Leben mit den Bewohnern der Grundstücke – räumliche Geschichten welche Menschen und Orte verbinden.

Die Praxis des flancierens hat bereits Künstler der 1960er und 1970er Jahre interessiert. Eine bestimmte Art des Denkens entspringt der kreativen Praxis des Laufens. Durch die Bewegung und das nur Vorbeigehen, wirkt die Außenwelt durch eine Reihe von Aufforderungen auf uns ein. Diese Aufforderungen sind wie eine Geschichte mit Bewegung verbunden. Flanieren ist eine Reise, ein Moment des “*nirgendwo*”-Seins. Eine Art der Erkenntnis, welche sich weigert, auf bestehende Zustände festgenagelt zu werden². Diese Art des Denkens lässt uns “*darüber hinaus*” und in “*was wäre wenn*” denken. Das ist wichtig für eine fortschrittliche Politik und Zukunft.

1 Jane Rendell: “A Place Between Art, Architecture and Critical Theory”, in: Proceedings to Place and Location, Tallinn/Estonia, 2003, pp. 221–233.

2 Rosi Braidotti: “Nomadic Subjects” in: Embodiment and Sexual Difference in Contemporary Feminist Peory, Columbia University Press, New York, 1994

Gathering information

experiencing

subjectivity, intuition, knowledge, not
linear, complex situations, pattern

Marcela Mity Costa

Knowledge in design is based on experience. Researchers from various fields have shown an interest in design procedures to learn more flexible forms of research. However, the subjective and experiential character of this knowledge difficult the scientific categorization of the processes and inhibits its integration into research.

Experience is a difficult practice to formalize because they are not linked linearly and cannot be separated from the subject. The concept of experience as a practice of research is questionable among researchers for two reasons: first, in academic context almost every generated content aimed at overcoming opinion and transforming it into generally recognizable knowledge. And the second reason is: experiences are fuzzy and always occur against a background of a personality.

The experiencing practice in design consists of doing as a way of identifying and dealing with problems, testing hypotheses and stimulating new thoughts. To guide this process, design requires many viewpoints and parameters that remain implicit which are difficult to verbalize.

Another way that experience is expressed in research context is by intuition. Decisions made by intuition are generally classified as arbitrary, but are just the opposite in design processes whereas they emerge by integrating multiple evaluations of earlier interactions. In other words, intuition results from complex deliberation process where the experience of the present is formed for individuals through patterns from past experiences.

These patterns of experience are very important in research as design deals with the whole. Being able to understand this whole, producing an order in complex situations and going beyond verbalized methodologies to produce well-founded research is the main characteristic of design processes.

Jörg Petruschat/Carola Zwick: "What are the boundaries of problems? A Dialogue", in: Nikola Doll/Horst Bredekamp/Wolfgang Schäffner (eds.): *+ultra: knowledge & gestaltung, Exh.cat.* (Berlin, Martin-Gropius-Bau), Leipzig: Seemann Henschel 2017, pp. 63–68.

Gathering Information

Bridging

Curating, Speculating, Conjecting,
Future, Synthesis

Noga Rosen

Bridging

Bridging is a research practice that seeks to connect different research disciplines with their implementation. Bridging is also the attempt to bridge different research disciplines as well as the attempt to bridge the design research itself and its application modes.

Design research can take place on several different levels. Engineering and Science, Art, History, Social Sciences and Humanities. These are different and sometimes contradictory worlds, and design research takes place in the fields that lie between the different disciplines. Bridging is an essential practice for navigating different research disciplines, gathering relevant data in each field, and eliminating irrelevant data. Certain disciplines such as engineering and exact sciences inherently contain both theory and application, while some disciplines in the humanities and the arts do not necessarily deal with the practical application of their research. Bridging seeks to produce a clear practice for applying research and theory.

Design, in its essence, is an eclectic collection of different practices, both research practices and their application. Bridging is a practice that is based on the flexibility of design and its ability to wander between different plains of creation.

The act of bridging is not just a curatorial process of collecting different practices, but an act of reconciling between research and application, theory and practice. Bridging is a process of negotiating the boundaries of each discipline and the ways in which their unique methodologies can be applied.

Claudia Mareis: “‘Designerly Ways of Knowing’. The Impertinent Promise of an Epistemic Culture of Design”, in: Nikola Doll/Horst Bredekamp/Wolfgang Schäffner (eds.): *+ultra: knowledge & gestaltung, Exh.cat.* (Berlin, Martin-Gropius-Bau), Leipzig: Seemann Henschel 2017, pp. 71–77.

Gathering Information

Projecting

Curating, Speculating, Conjecting,
Future, Synthesis

Noga Rosen

Projecting

Projecting is a research practice that deals with an approximate future and operates a set of tools to predict future conditions and circumstances to characterize that approximate future and design for it. This practice takes the projection as its main point of reference and establishes an array of knowledge acquisition on a set of underlying assumptions designed to characterize this future.

Projection in the simplest sense, is a set of informed speculation based on various analysis tools that seek to create an imagined dialogue with futuristic objects or entities in order to assess future needs or conditions and implement them in the design.

By combining various tools from both the exact sciences and the humanities and social sciences, projecting is an attempt to gather information about present conditions, trends and processes and to speculate on them to determine whether they will continue or change, and formulate their future structure, characteristics and needs.

This practice is inherently unclear and ambivalent, as the basic assumptions on which it is based are not axiomatic or demonstrable until the moment of realization of the future which they purport to predict.

The significance of projecting as a research practice is not merely the foundation of processes on speculative facts, but, and perhaps most importantly, the fulfillment of the speculative future by designing for it. Projective practice not only predicts the future, but also serves as a self-fulfilling prophecy. The design for an approximate future makes the speculative conditions real. Projecting is not just a practice of assuming assumptions, it is a practice of creating a new future. A projection of the present into the future.

Claudia Mareis: “‘Designerly Ways of Knowing’. The Impertinent Promise of an Epistemic Culture of Design”, in: Nikola Doll/Horst Bredekamp/Wolfgang Schäffner (eds.): *+ultra: knowledge & gestaltung*, Exh.cat. (Berlin, Martin-Gropius-Bau), Leipzig: Seemann Henschel 2017, pp. 71–77.

Gathering information

***digitizing
expressions***

digital transformation,
facial expressions, database

Patricia Vidal

Digitizing is the practice to convert pictures or sound into a digital form that can be processed by a computer. During the 1990s computer scientists and psychologists started developing digital technologies to digitize emotions in order to recognize and represent them. We find now this technology in computer programs, security systems, health care and several interfaces where the human interacts with the computer. But trying to recognize emotions has been practiced since the 19th century in medical research and also already on the 17th century, the french artist Charles Le Brun, studied face expressions and illustrated them. He made a tutorial for artists by showing muscle movement in the face. When making a research on expressions the individuality is excluded, so it can be standardised and the face turns to an objective scientific object.

The role facial musculature plays in expressions was studied by many scientists during the 19th century. One of them, Guillaume-Benjamin Duchenne, documented his findings photographically. He charted the facial muscles in a table and named them as: muscle of joy, of weeping, etc. Nowadays, a tool used for digitizing the facial expressions is Facial Action Coding System (FACS), a system developed by Paul Ekman and Wallace V. Friesen. It was developed for the empirical identification of emotions. It classifies combinations of specific facial muscular movements and operates with a catalog of six categories of emotions: happiness, sadness, fear, disgust, surprise and anger. The muscle movements translated into numeric codes, are called Action Units (AUs).

FACS classify facial expressions within a database and assigns them with an emotion category. To build the database, test subjects were instructed to reenact single AU combinations which were then recorded as still image. The techniques and practices employed to identify emotions by means of digital databases are similar to the methods of criminological archive in the 19th century. To classify and archive a sheer number of portrait photographs within a police archive, two methods were implemented. One, used individual characteristics, while the other one looked for characteristics common and superimposed them into one ideal composition. So works FACS, using methods of standardization on face expressions.

Iterating

Iterating

triaging

classifying, sorting, identifying,
prioritizing, curating

Laura Wagner

The term triage was coined in medicine and denoted the systematic sorting of patients in categories based on their status of emergency in order to tend to the ones in most critical condition first and thus save as many lives as possible. In design research, methods based on triage can be established, to quickly sort through, rank and prioritize datasets or media content before applying more granular design research approaches. This method can help to identify patterns and trends fast, especially when encountering a very large set of data or imagery.

While triaging in design can be orchestrated by the human mind alone, so that every item and step has to be processed by it, this procedure is laborious and unfeasible when encountering very large datasets or media content. Everything from simple sorting algorithms to highly sophisticated Neural Networks can help to analyze overwhelmingly large content and datasets, in order to help the human curator focus on interpreting and composing. Neural Networks trained for image classification allow for analyzing overwhelmingly large content and datasets. Depending on which algorithm is used and how it is tuned, data are clustered and/or ranked by relevance. The human in the loop can discover patterns in the clustered data and based on the calculation of the probability of desired content, she is the final curator. Machine learning algorithms enable humans to efficiently process amounts of data no one ever could without them, but are not flawless and highly biased by the data they are trained with. They can exacerbate the unintended or intended biases of their human creators and cause relevant data to get lost by being falsely labeled as irrelevant.

Iterating

Trying out

test, science, art, initiation,
intervention, validating, risk, failure

Mario Frank

British empiricism made way for the experiment as one of the main research practices in science (Berg). The birth of the scientific method as we know it today gave a great importance to the experiment-term. Art and science use the term »experiment« for describing rather different things. Science uses the term for describing a practice that is guided by strict rules and is fully replicable whereas in art the term experiment describes an explorative approach that leads to a non-replicable result (Berg). Berg states that this approach of distinctively differentiating between art and science does not lead anywhere and thus we should see the possibility of experimental practices working in both science and art. Looking at people like Archimedes, da Vinci or Galilei tells us that there is indeed a unified use of experimentation both in arts and sciences possible. Instead of looking at singular examples in history we should focus on the experimental practices themselves. Berg differentiates between three experimental practices.

experimenting

Deriving from the latin word »experimentum«, the term experiment existed in the german language long before it became one of the key terms of the scientific method. In its use before time of the British empiricism it found its roots in the area of medicine rather than physics, chemistry or alchemy. The aim of the experiment in medicine was to proof the effect of a drug. Medicine was seen as a form of art rather than science in the 16th and 17th century — this shows us that the experiment was already then a method used in the arts. When the British empiricists started propagating experimenting the term did not have a clear, sharp meaning rather than referring to a broader concept. Only in the 19th century, with the academic institutionalisation of the experiment in german universities the term gained a clear meaning. Experiments from that time onwards would be characterised by being standardised and demonstrative. The initiation of a (natural) process or intervening in it is central to the experiment.

Sampling

Sampling is a method of re-examining and validating the functionality of something in technical areas of working. Not only in the construction industry but also in military and weapon technology since the 18th century this method is used to test the functionality of technical equipment in a way that is replicable (Berg). Procedures that display the efficiency of certain apparatuses, materials and material-mixtures are a core element of sampling. In the sector of mining research sampling describes a qualitative analysis-method of minerals with a focus on the elements they consist of. Other than experimenting, sampling is a technique that does not require the researcher to make a connection between the state of the object of interest at the beginning and at the end of the experiment.

essaying

Before the term experimenting was standardised in the 19th century, the essay was a common term used to describe the action of experimenting. The venturesome gamble of trying things in a possibly not really scientifically-structured way is a key element of the essay. Taking the risk of failing is a core element of the essay. The term essay is used in the context of philosophical, philological, historical and event natural-scientific text-production. In the light of this context the term essay refers to experimenting with the mind as a material. In the context of literature the language as a material and different forms of text themselves become an object of experimentation. This aesthetic way of experimenting with language was used in the 19th century to position literature against the dominant natural sciences before the Avantgarde of the 20th century completely freed up language and developed new ways of experimenting freely with language as a kind of fabric or material.

Gunhild Berg: "Experimentieren, Probieren, Versuchen. Experimentelle Praktiken in Wissenschaften, Technik und Literatur", in: Séverine Marguin/Henrike Rabe/Wolfgang Schäffner et al. (eds.): Experimentieren. Einblicke in Praktiken und Versuchsaufbauten zwischen Wissenschaft und Gestaltung, Berlin: Transcript 2019, pp. 81–92.

Iterating

evoking

social, object, facilitating, interaction
invisible, ANT, relationship, design

Sahar Nikzad

“Design Evokes Certain Patterns of Social Interactions”

Stimulating Social Connections Through Design

It is the most important function of design which is create our relationships to society. “It is impossible to understand how a society works without appreciating how design shapes, conditions, facilitates, and makes possible everyday sociality.” The architectural sociologist Albena Yaneva said about this prominent role of design. Design role is invisible in making social hold. Each object makes with us a silence dialogue through design in a different way. In this way, design act as an invisible medium to interact with the device itself or connect to other humans through its function. It is Viewed as a type of connector, which relate society together with In-viting objects, but also Sharing and distributing the spaces of environment in different modes.

This perspective has most recently been taken up and discussed in the context of a cultural sociology of design or in conjunction with actor network theory (ANT), which shows how every single technical feature of an object connects to social. Although ANT scientists do not mention the connection of design to this, it is obvious that each thing need to a mediator to connect to the society. This is an interesting fact that object’s social performance is depend on how we apply them. It presents there is a scenario behind this act which ties the object on one hand and society on the other hand, involved in relationships mediated by particular design. “As a type of connector, design is not a separate cold domain of material relations.” (Yaneva 2009) If we understand the “designerliness of design”, there will be no need of psychological, historical explanations. Thinking about an epistemic culture of design therefore also means revisiting the conventional understanding of isolated design products and objects while conceptualizing possible actions and agendas as components of a material and visual culture shaped by design.



Neil Patel

¹ Claudia Mareis: “‘Designerly Ways of Knowing’. The Impertinent Promise of an Epistemic Culture of Design”, in: Nikola Doll/Horst Bredekamp/Wolfgang Schäffner (eds.): +ultra: knowledge & gestaltung, Exh.cat. (Berlin, Martin-Gropius-Bau), Leipzig: Seemann Henschel 2017, pp. 71–77.

Iterating

Describing

observing, concrete, design thinking,
patterns, integration,

Zehui Dong

Describing

Describing is a process to translate and express the things memorized after observing. Observation is an essential technique for extending the repertoire of implicit knowledge. The designer's associative thinking ability creates completely different connections between what they observe and previously memories. Designers organise new patterns and transfer them into different contexts by observing seemingly disparate events.

Describing is also the process of integration of experience, connecting the experience model of the body and the mind. These ideas, or models, are evidently very abstract, but in their very abstraction, they formulate and make claims to reality; they are models that do not run after reality, but tend to realization. The concept of design contains an ambiguity. Design means to make the idea public and transform it into a real and concrete object. On the other hand, when design thinking transforms pure ideas into the public area, »placement« needs to be chosen very carefully .

Design and engineering is rhetorical devices in the sphere of human exchange. They form the physical language a culture speaks in a dialogue about everything. Delaying the process of concretization as long as possible. That is fear of potential disappointment with the materialization. The accuracy of the method describing the problem to be solved also represents the completeness of the design being expressed.

“What are the boundaries of problems? A Dialogue by Jörg Petruschat and Carola Zwick” , Nikola Doll, Horst Bredekamp, Wolfgang Schäffner (Hrsg.): +ultra. knowledge & gestaltung, Exh.cat., Berlin, Martin-Gropius-Bau. Leipzig: Seemann Henschel 2017.P.63-68.

Iterating

Testing

tacit knowledge, hypotheses, intuition,
experience, future-oriented,

Zehui Dong

Testing

The so-called tacit knowledge, that is, the designer's tacit knowledge, is obtained and constructed from doing things. In these terms, this is not a method of producing handicrafts. Instead, it acts as a catalyst for dealing with various problems, testing hypotheses, and inspiring more thinking.

Testing is very important in the design process, because design is usually a combination of science and intuition, procedures and experience. Design needs to maintain many implicit views and paradigms in the design process. Designers should not shirk their responsibilities, because their decision making process will avoid descriptive objectification, so they often attribute their decisions because of intuition. It is by no means arbitrary; instead, it is produced by a complex deliberative process that can only be explained after the form is found and integrated into its context. The final design is the optimal solution for testing.

The designer's experience comes from testing hypotheses and constantly doing. Designers are very good at abstracting forms and patterns from previous experience. They can usually easily liberate themselves from the semantics of previous exercises. They have absolute sovereignty in testing configurations that exceed predetermined standards.

The process of testing is essentially the process of design practice. This is a future-oriented action that cannot be simply guessed from the past or calculated by traditional scientific methods.

"What are the boundaries of problems? A Dialogue by Jörg Petruschat and Carola Zwick", Nikola Doll, Horst Bredekamp, Wolfgang Schäffner (Hrsg.): +ultra. knowledge & gestaltung, Exh.cat., Berlin, Martin-Gropius-Bau. Leipzig: Seemann Henschel 2017.P.63-68.

Observing

observing

deep thinking

pathfinding, investigating, questioning,
answering, finding

Felix Ahn

Deep thinking ist zunächst eine Anspielung auf den fiktionalen Computer: „Deep thought“ aus dem Buch „per Anhalter durch die Galaxis“ von Douglas Adams. Der Computer wurde entworfen um die Frage ‘nach dem Leben, dem Universum und dem ganzen Rest“ zu beantworten. Nach mehreren Millionen Jahren Rechenzeit liefert dieser die wenig befriedigende Antwort: „42“. Im Folgenden wird ein noch viel leistungsfähigerer Computer entworfen, um die eigentliche Frage zu berechnen.

Als Gestaltungsrichtlinie und -Praxis wird „Deep thinking“ jedoch über diesen Klassiker der Science-Fiktion hinaus vor allem im Kontext von „Big Data“ relevant. Angesichts der unüberschaubaren Menge an Daten, mit welcher sich Analysten gegenwärtig konfrontiert sehen, verblasst die Antwort auf eine potenzielle Frage in der scheinbar unendlichen Mannigfaltigkeit an Möglichen Deutungswegen. In den Daten ist also bereits jedwede mögliche Antwort enthalten, sodass letztlich die Frage und deren Formulierung den Pfad zur „richtigen“ Antwort terminieren. Reinhard Wendler schreibt in seinem Beitrag „Big Data and the Technical Images of Scenario Modeling“ aus dem Band „+ultra knowledge & gestaltung“ zum Thema Daten folgendes:

„These new data masses did not come across as alien on account of their unfamiliar logic alone, but also because they could rarely ever be understood as answers to previously posed questions. They shut down the idealized sequence of question and answer. Instead of responding to questions, data masses appear to harbor an infinite number of latent answers, which must be concretized by asking the right questions.“

Die Chronologie zwischen Frage und Antwort löst sich in der Mannigfaltigkeit der möglichen Auswertung- und Deutungsszenarien auf. „Deep Thinking“ könnte also eine design Praxis sein, welche nicht stoisch nach Antworten sucht, sondern die Frage selbst zum Gegenstand der Untersuchung erklärt und somit die Komplexität und Vieldeutigkeit gegenwärtiger Problemstellungen würdigt und diesen gerecht wird. Der Gestaltungsprozess besteht dann nichtmehr in der bloßen Konstruktion der Antwort, sondern vielmehr in deren Herleitung. Wie der Lichtkegel einer Taschenlampe der in der Dunkelheit des Dachbodens auf das Gesuchte -und längst existente - Objekt fällt.

1 Reinhard Wendler: “Big Data and the Technical Images of Scenario Modeling”, in: Nikola Doll/Horst Bredekamp/Wolfgang Schäffner (eds.): +ultra: knowledge & gestaltung, Exh.cat. (Berlin, Martin-Gropius-Bau), Leipzig: Seemann Henschel 2017, pp. 307–314.

observing

zuhandeln

acting, co-acting, meaning, observing,
reacting

Felix Ahn

“Zuhandeln” or „to-acting“ as a design practice is a disguise of Heidegger’s “Zuhandensein” or “Zuhandenheit”, which can be understood as the peripheral, unconscious and decentralized existence of “stuff”. Something is “zuhanden” and not “vorhanden” when this something seems to exist as always, its peculiarity thus lies in the matter-of-factness of the thing. The right way to deal with a “thing” that is “zuhanden” is therefore its use. It is thus not an epistemological object whose function has yet to be fathomed, but an axiomatic component of our experience of reality.

Zuhandeln as a practice of design is linked to this thought. Consequently, zuhandeln means a practice of design that does not concentrate on the possibilities inscribed in an object. Rather, it refers to a type of action that allows things to emerge from themselves through unbiased action, without emphasizing or concealing the intention. It is an attempt to playfully finding a way of dealing with things that takes place without anticipation and expectations of discovery. In the evaluation and analysis of large amounts of data, this could be a practice in which the amount of data is understood as a natural entity. The problem with evaluating large amounts of data is that the extraction of meaning always occurs at the moment of suspicion. Both in the collection and especially in the processing of the data, the collected data is assumed to be significant. According to this suspicion, the data sets are handled and processed. Although this method reveals results, analysts run the risk of overlooking peripheral answers and conclusions from the data when pursuing their own premises. To act would mean to process this data in a data-compliant manner, i.e. to use it without suspicion. Like a piece of metal whose field lines only align and point in one direction at the last moment when a magnet is applied. Zuhanden could therefore also be translated literally into a practice of action: to-acting means to act, to serve things impartially and to use them in the way the thing is intended to be used.

1 Heidegger, Martin (2001): Sein und Zeit. 18. Aufl., unveränd. Nachdr. der 15., an Hand der Gesamtausg. durchges. Aufl. mit den Randbemerkungen aus dem Handex. des Autors im Anh. Tübingen: Niemeyer.

Observing

***conveying
gestures***

intuitivity, machine learning,
interface

Patricia Vidal

Conveying gestures of users is a method where a computer spots the gesture, distinguishes the most relevant movement and locates the start and end points of it. The computer was always a path of input and output. How the gestures were given to the computer, has changed in different ways. With the invention of the Ipad and Iphone, the interaction between human and machine got a new function which was the touchscreen with the fingers operation directly on the monitor. As this new function came out, it was very fast learned because of its self-evident way of use. The user conveys his gestures into the machine in different ways, either in a touchscreen or with a keyboard or with a camera.

In early days it was not allowed to interact with the machine. In the 1970s people began experimenting with computers to create art and music and so the ergonomic mouse came and we learned to use it. The gestures and movement we have operating a machine has been learned, like the use of the keyboard or the mouse. Trying to be more efficient, the Tablet was invented. The user could finally have more direct manipulation of texts on the screen and new gestures to navigate these devices were as well learned. But a big difference was in the Personal Digital Assistants (PDAs), while they used stylus pens for input and control, the users of Palm from XEROX, had to learn movements that the computer could convey and understand. With Apple devices, it was the opposite. The computer had to recognize the movements of the user and by the repetition of them, the computer learned the user's gesture.

When using a security camera for detecting aggression on public spaces, the computer has to convey the images into algorithms and with its database, interpret the gestures and movements of the aggressors to identify them. This is possible only by giving the database examples and creating intentional gestures, as many as possible, that it can be archived and categorized. But of course, there are always gaps in between. There are some very inconspicuous movements that can not be conveyed by the camera. Aggressors would learn new gestures in order to be invisible for the cameras. So the future development of conveying gestures to a computer, will depend on how much we know of human movements and also looking for what we don't know about them.

observing

Forming

Organisms, Form

Purposeful, Functional, aesthetic

Renee Tsui

Charles Darwin's epochal *work On the Origin of Species* confirms that "The overwhelming wealth of forms of living beings induces even levelheaded natural scientists to rave". Before human beings, there were many living things in the world, from micro-organisms to plants to animals. Their shapes, skin and even their micro body structures all had the meaning of their existence, as if they had been designed by a designer.

Forming

The number of eukaryotes in the world should be around 8.7 million. At present, there are two opinions about the type and forming of species. One is theism, which believes that all the living things on earth are created by God. Others believe that living things form are evolved. According to the theory of evolution, the formation of biological form and structure is *purposeful* and *functional*.

Having function includes the function of aesthetic feeling and the production of structural function. Since ancient times, the formation of many organisms has different functions. For example, there are purposeful formation cases: peacocks have bright feathers to attract heterosexual, male crab's big claws to attract female crab. As Darwin said, the formation of each organism is purposeful and slowly evolving.

However, although the formation of such characteristics is purposeful, on the contrary, although they achieve the function of attracting the opposite sex, they reduce the function of Self-Defense (because it is too obvious). This is the same as when the designer designs the handle of the pot which is stable, although it improves the convenience, it is not easy to store. Should the critical idea of this relationship also form, is the formation of biology designed? Or is everything just a designed description?

Gerhard Scholtz: "Evolution as Designer?", in: Nikola Doll/Horst Bredekamp/Wolfgang Schäffner (eds.): *+ultra: knowledge & gestaltung*, Exh.cat. (Berlin, Martin-Gropius-Bau), Leipzig: Seemann Henschel 2017, pp. 111–112.

observing

Evolving

Evolving Design, Transfer, dynamic
symmetries, multifunctionality,
flashed performance,
modality, seriality, economy,
simulated

Renee Tsui

Evolving

Evolving changes in the heritable characteristics of biological populations over successive generations. These characteristics are the expressions of genes that are passed on from parent to offspring during reproduction. Different characteristics tend to exist within any given population as a result of mutation, genetic recombination, and other sources of genetic variation.[3] Evolution occurs when evolutionary processes such as natural selection (including sexual selection) and genetic drift act on this variation, resulting in certain characteristics becoming more common or rare within a population.

In this paper, the evolution of organisms is divided into nine different ways and principles, namely: form Transfer (through the part of the species that needs to evolve, it will not change directly on the body, but directly pass on to the next generation through gene change), dynamics (indicating the ability to form a dynamic sense by changing shape or color, which is most commonly used to create communication), symmetries (different ecology must produce symmetry at a certain stage, most of which is to generate a form for movement There are some symmetries on, some organs must operate under the condition of symmetry), multifunctionality, use of existing structures, flashed performance, modality and seriality, economy (to make organisms survive more effectively) and simulated solutions.

Darwin's theory of evolution emphasizes that organisms are purposeful evolution, but although the same purpose of salinization is different. For example, but the same thing is that the animals walking on the road will insects, and their walking way and the structure of the corner are different. For example, a pot cow walks through body wriggling, but some walkthrough joints and muscles. This proves that these nine methods of evolutionism can be used in design-friendly. The same is the function of movement. Organisms can evolve in various ways. So we should also think in a direction other than the existing way when we design.

Gerhard Scholtz: "Evolution as Designer?", in: Nikola Doll/Horst Bredekamp/Wolfgang Schäffner (eds.): +ultra: knowledge & gestaltung, Exh.cat. (Berlin, Martin-Gropius-Bau), Leipzig: Seemann Henschel 2017, pp. 113–116.

Observing

Learning From Making.

Product, building, materialization,
anthropology, meaning, collaboration.

Sara Lucia Arbelaez

How do we understand the process of design? How do designers approach the process of creating through making and what do they learn from it?

In order to gain an understanding of the meaning of products or buildings, researcher Albena Yaneva¹ proposes an anthropological approach to analyzing design and architecture by observing processes happening inside a design studio or an architectural office. To do so, Yaneva conducted participant observation at the Dutch firm Office for Metropolitan Architecture (OMA)² from 2001 to 2002, arguing that to get a bigger picture of the meaning of design, researchers must move beyond studying social contexts, or iconic architects, to a more mundane study of the internal experience of design.

The design processes of a metropolitan scale office as OMA, might be supported by well-thought guidelines, however, the complexity and globality cohabitating at such place, leads design to follow its own logic, resulting in unpredictable transformations. By looking at design from the inside, it can be said that apparently trivial processes involved in design making, are quite valuable in order to foster creativity.

In the process of making, designers have to deal with vast options to materialize their reflections upon a given project. Elements that could be seen as supposedly trivial (diagrams, discarded models, retouched images) express the capacity of design to mutate, to transform and to assemble different contexts and cultures. Moreover, multiple collaborators are involved and the process of making is subject to collective transformations, making design processes to reflect multiple ways of thinking. It could be said that the different possibilities to materialize ideas, as well as the co-creative nature of design, lead to an alternative way to reflect and gain knowledge during the process of making architecture.

Models of exploration and small operations during the design process of buildings contain the same level of complexity of the society for which a building is created. What could be seen as a rejected foam model or a diagram on a piece of paper, could actually be the initial transformation of the future of a given city.

Source:

Albena Yaneva: Made by the Office for Metropolitan Architecture: An Ethnography of Design, Rotterdam: Nai010 publishers 2013.

1 Albena Yaneva is Professor of Architectural Theory at the University of Manchester and director of the Manchester Architecture Research Group (MARG) at the Urban Institute. Her book *Made by the OMA: An Ethnography of Design* (Rotterdam: 010 Publishers, 2009) draws on an original approach of ethnography of design and was defined by the critics as “revolutionary in analyzing the day-to-day practice of designers.”

2 OMA is an architectural firm based in Rotterdam, founded in 1975 by architect Rem Koolhaas and architect Elia Zenghelis, along with Madelon Vriesendorp and Zoe Zenghelis.

Observing

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observing

open

experimenting

investigating, trial and error, improvisation, testing, measuring

Lucca Sophie Weigert

Generally speaking, an experiment is initially any kind of trial that serves to acquire knowledge. However, if you look at different scientific fields in which experiments are carried out, there are significant differences in the conception of the term of experimenting. In the scientific context an experiment always has to follow a beforehand precisely defined experimental setup in order to achieve the highest possible reproducibility, standardizability and measurability; while free experimentation is characterized by the fact that it does not have to follow any clear rules.

Free experimentation is less about an accurately planned procedure than it is about creating and exploring a certain scenario through improvisation and trial and error. This approach, which is unconventional for an experiment in the narrower sense, simplifies the implementation and enables the integration of creative elements. In addition, the lack of the need for a clearly formulated hypothesis allows us to come across knowledge that was initially unpredictable and to integrate this knowledge into the further course of the experiment.

In free experimenting, the experimental setups do not follow a rigid course of action, there is room for coincidence, spontaneity and intuition. It is possible to integrate and combine elements from different forms of experimentation. This explorative approach increases both the possible scope of application and the range of results. Free experimentation, among other things, enables to research for answers to questions that cannot be clearly assigned to one certain area of expertise, but lie between two subject areas or are relevant for two or more different areas. Resulting there are new interdisciplinary experimental formats that can be tailored to precisely suit the desired result or the specific problem and the particular question.

observing

Optimizing

practical application, step,
actively, height

Yushi Chen

Optimizing

Design can be conceived as a form of process optimization and control. Optimizing is also an indispensable improvement process in design. Optimizing is to make the design more relevant to the actual situation and to solve the problem. In the process of concept iterate, it has also been optimized.

Similar to transforming, optimizing occurs at every step of the design process. But unlike transforming, optimizing is a spiraling process, and transforming is constantly advancing.

Questioning and commenting will lead to optimization, but in turn these are not necessary conditions for optimization, because optimization is usually caused actively. Any theme that may come to mind, even facts, can be questioned and doubted in terms of aesthetics, visual and material properties, and can be based on its potential formability, variability, functionality and expediency, and its symbolism in action. The role of investigation and communication. This is the crux of the problem. It was converted, redesigned, and optimized to achieve a more excellent design.

Constantly optimizing the design process and design plan can not only make the design itself reach a certain height and good effect. This also promotes the development of design research and design industry, resulting in a benign and positive phenomenon.

Claudia Mareis: “‘Designerly Ways of Knowing’. The Impertinent Promise of an Epistemic Culture of Design”, in: Nikola Doll/Horst Bredekamp/Wolfgang Schäffner (eds.): *+ultra: knowledge & gestaltung*, Exh.cat. (Berlin, Martin-Gropius-Bau), Leipzig: Seemann Henschel 2017, pp. 71–77.

observing

Transforming

feasible, spiraling process,
aesthetic, formability
embodied

Yushi Chen

Transforming

Transforming is a basic process in design, that is, the design process is a process of continuous transformation. Designer transforming research questions into material realities with design-specific methods and tools.

Transforming real research problems into solutions and transforming virtual concepts into practical applications are all commonly used “transforming”. “Transforming” is defined in the design domain, including design-specific activities and methods, such as creating sketches, layouts, interfaces, plans, models and prototypes, or using analog and digital design tools.

Each design practice is through the use of different design tools or design activities in order to define new possibilities in daily life or the material world. It follows that design activities and tools are integrated with the design process, thereby promoting the development of knowledge practice. Because the design process involves not only acquiring existing knowledge or ready-made concepts and giving them substantive form.

Transform is not a specific design method or design practice, but the concept of transformation is embodied in all design methods and is actually practiced.

The significance of transformation is that it can form virtual fuzzy problems or concepts into the final clear and feasible solution. This is an inevitable process in the design, and it will also affect every decision virtually. The “transforming” sublimates the concept, allowing the concept to practice and land.

Claudia Mareis: “‘Designerly Ways of Knowing’. The Impertinent Promise of an Epistemic Culture of Design”, in: Nikola Doll/Horst Bredekamp/Wolfgang Schäffner (eds.): *+ultra: knowledge & gestaltung*, Exh.cat. (Berlin, Martin-Gropius-Bau), Leipzig: Seemann Henschel 2017, pp. 71–77.