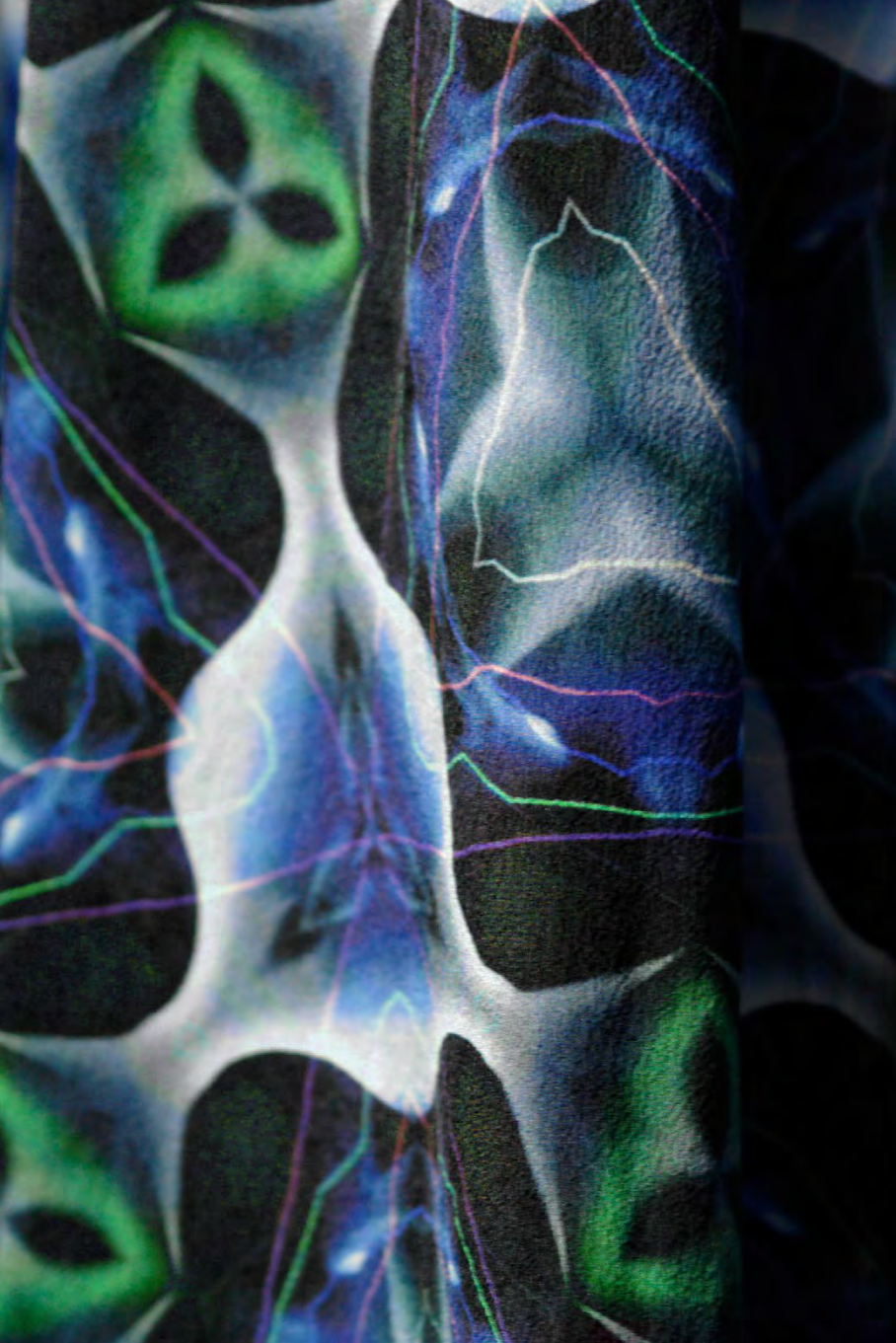


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SEARCH ROUTINES:  
TALES OF DATABASES





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# PREFACE



# SEARCH ROUTINES: TALES OF DATABASES

LENA BRÜGGEMANN

Long traveling shots. One sees piles of books, rolls of paper, piles of magazines, and endless rows. A microphone falls into the picture. The narrator starts to speak. In the short film *Toute la mémoire du monde* (1956) Alain Resnais follows the long process of sorting, tagging and indexing a book until it becomes a retrievable, searchable item.



On a Kindle Fire Screen, one product follows the other on its way into a virtual shopping cart, showing a gigantic database of the useful and the bizarre, brought into order by the purchasing behavior of the consumers. In their work *Other People Also Bought* (2013) Sebastian Schmieg and Jonas Lund take Amazon's prompt literally and add *ad infinitum* the next suggested item to the shopping cart.

What is a database? And how can it be represented? While the library, as Alain Resnais has shown, sits proudly in the center of Paris, the places where "all the knowledge of the world" today is collected, sorted and connected are in remote areas, in plain buildings.

## *Search Routines: Tales of Databases*



Databases permeate our daily life. Today they provide the infrastructure of most elementary human actions. But databases and their administration and utilization structures are usually invisible. The Internet and its important aspect, its database-systems, brought with it “strict universal standards that have been rolled out more widely and more quickly than in any other medium



throughout history” (Galloway/Thacker 2007:125). Most of these standards we do not notice, but they stabilize and materialize social forces as well as organizational and political logic. This is an aspect we could observe already in the Alain Resnais film: the camera, after having traveled through the back of the National Library of France, arrives in the reading room. The user sits there and waits to get the result of his or her query. To use it one does not need to know the functioning of the apparatus.



*Search Routines: Tales of Databases* aims to tell a story, to bring things into a specific order. It's a story of the database as form, as a cultural tool. The project, which took place in October and November 2014, comprised an exhibition and workshops at *D21 Kunstraum* and a symposium at the *sublab* hackerspace in Leipzig to connect different fields and initiate a broader discussion about the database as material structure which administer our everyday lives. The project examines the underlying history of the ideas inside the technical standards. Instead of focusing on the usual visualization of specific data-sets, in which the method of visualization can tend to obfuscate its own data, it follows the logic and logistics of databases and the cultures and economies behind them.



Why do we miss representations of databases and data centers? Who persuaded us that technologies are self-acting, that they are based on pure technical reasoning? The missing representation seems a strategical move. As Alexander Galloway writes: “The point of unrepresentability is the point of power. And the point of power today is not in the image. The point of power resides in networks, computers, algorithms, information and data” (Galloway 2012:92). So let us contest the image of the neutral container into which data is thrown and look at how to find better representations and a better understanding of the narratives behind.

In the exhibition at D21 Kunstraum, six international artists and artist groups were shown. This book contains



interviews, in which the artists speak about how they created narratives, intertwined (his-)stories of the development of the relational database and the genesis of post-Fordism (Pil & Galia Kollektiv, Francis Hunger), showed the material (Sebastian Schmieg and Johannes P. Osterhoff) and ‘immaterial’ structures and architectures (Kernel) and the scripted routines which structure user behavior in the interaction with databases (Sebastian Schmieg and Jonas Lund).

Two workshops with the artists Heath Bunting and WaiWai practiced tactics of avoiding entry into the registers of state- and business-governance: The participants in WaiWai’s workshop, after researching the data collected on themselves, learned to avoid as many systems of control as possible, finally retreating into the wild woods of Leipzig. The participants in Heath Bunting’s workshop tried to find shelter by copying the strategies of international companies and became anonymous corporations.

In the symposium at the sublab hackerspace, computer scientist Wolfgang Coy spoke about the historical development of data and data storage from tape to hard drives and random access discs. In his lecture, artist Francis Hunger worked out with the audience the “embeddedness” of databases in everyday life, starting with the taking of a shower in the morning, continuing on to the checking the weather forecast, to using the public transport system, and so on. The media theorist Marcus Burkhardt shed light onto the genesis of databases and its modeling of the user.

In short input-lectures, the computer scientist Rayk Westphal remarked the problem of building categories

and ontologies which are able to represent the world. The association *Bündnis Privatsphäre Leipzig* reflected the privacy issues coming with the recording and utilization of everything into electronically readable data. Finally, sublab-member Herr Flupke criticized the missing literacy of most computer users, as a result leading to a kind of animistic behavior similar to a belief in magic.

This publication has as its purpose enlarging on the topics of the symposium. Francis Hunger discusses in his article *Database Infrastructure – Factual repercussions of a ghost* databases as infrastructures and points out signs that render the interaction with a database visible. Marcus Burkhardt shows in his article *A New Digital Purity? On Architectures for Digital Immateriality* the development of today's standards in database-modeling. By inquiring the historical technical discussions, he shows the cultural implications of the technical structures onto our understanding and use of databases today.

It is thanks to the involvement of many institutions and individuals that this project was able to take place in this form. Starting with the most important infrastructures: the help of many people organized as sublab and as D21 Kunstraum, especially Hannah Sieben, who co-curated the exhibition and moderated the symposium; Christiane Fiebig and Sebastian Schindler, who accommodated and cared for the workshop-participants; Michael Heidt, who transcoded files and solved technical problems; Paul Ziolkowski, who was responsible for the setup of the exhibition and Michael Moser, who since the beginning of D21 Kunstraum documented the exhibition. Thanks to Kloschi, Equinox and others, the sublab system became

more transparent for us all. They also recorded the symposium; Benjamin Kiessling and Tina Mamczur provided the workshop-participants with cutlery and tasks to develop the effort finally into a dinner.

We would like to express our gratitude to all the artists, as well to the *V22 Collection* for lending work, and to the lecturer and participants; Juliane Richter and William Clapp for the editing of this publication, and Paul Spehr for the design and ideas on the form of this publication. At last we would like to thank Francis Hunger, with whom it was a great pleasure to work and who initially came up with the topic.

Without the assistance of supporters and sponsor this project would not have been possible. We would especially like to thank the *Kulturstiftung des Freistaates Sachsen*, which not only funded the project but also sparked the publication of this compendium; Marcus Burkhardt and the *Hybrid Publishing Lab* at Lüneburg for the possibility of professional editing. Further financial support for the project was made available by the *Kulturamt der Stadt Leipzig* and *Stiftung Kulturwerk VG Bild-Kunst*.

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Galloway, Alexander R., and Thacker, Eugene. *The Exploit: A Theory of Networks*. Minneapolis, Minn.: University of Minnesota Press 2007

Galloway, Alexander R. *The Interface Effect*, Cambridge/Malden: Polity Press 2012



# EXHIBITION



BUCHROUTINEN:  
ERZÄHLUNGEN  
VON DATE BANK

AUSSTELLUNG  
09.10. — 02.11.2014

MIT: FRANZ HUNGER,  
KORNEL PIKAND CILLA  
KOLLECTIV, SEBASTIAN  
SCHMIEG, IGONAS LIND  
UND JOHANNES P.  
OSTERHOF

D 21 KUNSTRAUM LEIPZIG

OPEN



Odermannstraße

ST. KUNSTRAUM LEITZIG

FRANZ  
KUNST  
LEITZIG  
2014





















## INTERVIEW:

### SEBASTIAN SCHMIEG

*March 12, 2015, 11pm Berlin & Leipzig time*

*Weather Berlin: 7 degrees, rainy*

*Weather Leipzig: 3 degrees, cloudy*

Sebastian Schmieg is an artist based in Berlin. We spoke with him about two of his works, both of which were exhibited at D21 Kunstraum: the first is a collaboration with Jonas Lund, *Other people also bought*, which consists of an algorithm which runs on Amazon, a website, a book stack of the first 10 suggested books, and an Amazon-Kindle Fire (see p. 20). The second is *10kg From the New Factory*, a collaboration with Johannes P Osterhoff. The work is an objet trouvé and is composed of fragments of destroyed hard disks, coming from a Google-data center in Saint-Ghislain, Belgium (p. 25).

Lena Brüggemann: What is an algorithm to you? How would you describe an algorithm?

Sebastian Schmieg: There are probably many ways to understand it, but at the core it's just a sequence of steps that you can follow to get to some point. But nowadays I would say its more like automating some process in combination with data. You apply some rules on data.

That is the technical description of an algorithm. If you look at an algorithm from a cultural viewpoint, you look at *which* rules you build into this thing and *what* are the steps. In the end it's people who are hiding within that algorithm: somebody or a group of people define an algorithm with a specific goal in mind.

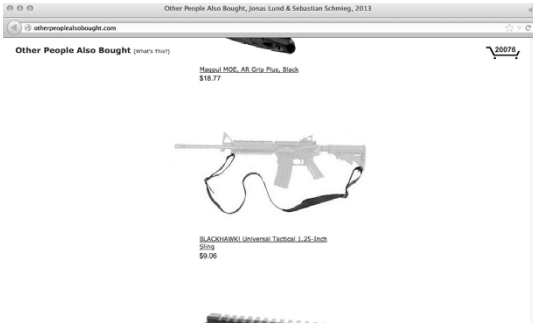
## Interview

L: The core of *Other people also bought*, a collaboration with Jonas Lund, is an algorithm. Beginning with the first product ever sold by Amazon – Douglas Hofstadter's book *Fluid Concepts & Creative Analogies: Computer Models of the Fundamental Mechanisms of Thought*. After that a script adds the next product suggested by Amazon to an Amazon shopping-card, and so on.

S: In the case of *Other people also bought*, Jonas and I also wrote an algorithm, but the target, the starting point, was the algorithm that is used by Amazon to recommend and organize their whole store. We were looking for a way to make this Amazon algorithm visible by interacting with it. That's part of my interest in making these things visible. You can say it's a sequence of steps and so on and so on, but it is pretty hard to see what is actually going on and what, why and for whom is it doing something.

L: In the work there were often very surprising and strange changes from one recommended product-group to another, for example, pacifiers followed by adapters to fix mobile phones to motorbikes. Looking at it, I always tried personally to find explanations for this, to find the rules. After doing your work about it, do you understand this Amazon algorithm or do you have just hints of how it works?

S: I wouldn't say that this work is directed towards understanding. It is not reverse engineering. Of course we tried to get a better understanding in some way, but at the same time we are telling a story with it. What one really understands is that it is really boring. You know, it goes from one mostly boring product to the next one. It shows just this vast universe of boring, weird things that people buy.



L: For me, especially interesting was that the first ten books sold, which worked as a kind of pedestal for the kindle fire on which the script was running, are all about artificial intelligence or the enhancement of intelligence.

S: I remember you said once that it is interesting that all these smart people seem to try to figure out what makes them so smart. I think it is a very nice starting point. The Amazon shopping process seems rather banal or not too profound but in the end this is one of these big, big things that might evolve into something even bigger, something like artificial intelligence. But in this case it is so obvious that it is not like this. There are some smart people; they create something; and we can use it. We can be happy that we can use it, but it is something that we all together create, in this case by shopping and browsing the Amazon website. *We* create these connections. Amazon has no idea; there are just some unrelated things we connect together. I think that those books in the beginning, asking for questions such as ‘What is intelligence?’ and so on, are really the foundation of what we all do together.

L: It starts with the first book ever sold on Amazon, Douglas Hofstadters *Fluid Concepts & Creative Analogies*:

## Interview

*Computer Models of the Fundamental Mechanisms of Thought.* I always told the visitors to the exhibition that if you would buy this book at Amazon and afterward, for example, “The Lion King” and ask all your friends to do the same, it would probably influence the recommendation for other possible shoppers interested in *Fluid concepts* ...



S: Definitely. Especially in that case it should be rather easy to do this, because it is a product that is not sold very often. So it should be rather easy to game the system and make some really weird connections. Maybe you know the piece by David Horowitz, who posted a note on the Internet saying, ‘People, take a photo of yourself with your head in the freezer, name it with a specific number and upload it at Flickr.’ So, now if you search for this specific number on Google, all you get is people with their head in the freezer.

L: You programmed this algorithm, put its output on a website and everyone visiting the website started the

script anew. Now it is not running anymore, you stopped it after one year. How do you decide when a work begins and ends?

S: Basically, it was a performance for one year. As you said: Once somebody came onto the website, the process started. This project looks very simple, but technically it was very complicated, having this thing running on Amazon all the time without ever crashing. In the end, there was really a lot of work involved in keeping it running. So, at some point we said, okay, it would be nice of course to have it run forever, like: We won the game, we shopped all of Amazon! But it is technically not possible. So we decided to run it one year, to have a good period of time to look back and be able to replay it, like we did in Leipzig.

L: But is it possible to put endless products into your shopping card?

S: Yes, that is possible. Actually your shopping card is limited to around thousand products. And then there is a second shopping card they open after this, which has no limit, or at least we didn't hit the limit.

L: It's strange that your shopping card can be so big. The symbol for this at Amazon looks like a real shopping card, but you can fill it endlessly.

S: What we did was, we made an extendable shopping card: it gets longer and longer.

L: How would you describe your way of working?

S: At the center of it is looking at us people and how we interact through things. And what all this does to us and what we can do with those things. I spend a lot of time writing software and code, and that really influences the way in which I make works. Also I mostly publish my works online, even though it might start with a thing

## Interview

that used to be an object, but in the end it becomes a photo or a video.

L: It seems to me that in your work the concept comes first, and the form evolves from the concept.

S: Yes. Ideally there is nothing forcing me to make decisions on my own, but just to find something that really dictates the form in the end. We just bring it to a point where it tells us something. What does this mean, this pattern. What does it mean “Your Shopping Cart lives to serve. Give it purpose,” this weird thing – “fill it with books, CDs, DVDs, toys, electronics, and more.” So, but what does it actually mean – let’s just do it.

L: Lets speak about your other work in the exhibition *10kg From the New Factory*, a collaboration with Johannes P Osterhoff. How did you get the material for the work?

S: The piece started maybe two years ago when Google released a series of photos taken in their data centers. Very glossy, super nice photos. You look into the data center and it is so high tech, so pretty.

L: You can even see a deer in front of a data center ...

S: But if you look closer, you see that a lot is photo-shopped. One of the really geometric looking photos is just mirrored. But there was one photo that showed destroyed hard drives; that really caught my eye. I thought that this is the essence of this factory. When we go back to *Other people also bought*, this is all happening in these data centers, on the hard drives. The hard drive itself actually used to be like one of the two main things in your computer. But now its moving away from your computer into the cloud, and they can destroy it, but you can’t anymore. And what you can not destroy, is not yours anymore.

So we really wanted to have some of these hard drives. We thought it would be impossible to get into the data

center, it would be impossible to get anything from there except waste.



So we used some contacts we had and in the end we got it.  
L: As we set up the exhibition you told me that one can see in the fragments that they use very cheap consumer hard drives.

S: Yes, they need so many of them that it seems to be the cheapest way to have consumer hard drives and replace them with new ones after some time.

There is a Youtube-video, where you could see how the hard drives get replaced. They have a full process of finding the ones that aren't working anymore. As for the destroying process it is important for them to ensure that all data is lost from the destroyed hard drives so that privacy can be kept. So they have a chain of machines that destroy the hard drives. In the end you get a box full of little pieces.

L: Pretty funny to hear that my privacy, which is constantly denied, is at last considered.

*Interview*

S: Just in theory: The pieces that were lying in the exhibition could have contained your emails or some really famous video, you never know.

L: At least for some time.

S: Yes, exactly.



# INTERVIEW

## FRANCIS HUNGER

*April 30, 2015, 8pm Leipzig time.*

*Weather Leipzig: Thunderstorm dividing east and west.*

Francis Hunger is an artist based in Leipzig. In his artistic practice he often intertwines historical research with speculative narratives. His works reflect the history of technology, understood as ideological constellations of knowledge and power.

With the video work *Deep Love Algorithm* he tells a love story between Jan and Margret (p. 22). Jan is a journalist who is at the moment working on a story about databases; Margret is an author. She tells him after a while that she is already over eighty years old, but her body does not age. While the relationship develops, we are taken to the history of databases and political struggle. Leading to a present where movement seems to not exist. The whole story is told in black and white still pictures and written dialogues.

LENA BRÜGGEMANN: Francis, how did you get interested in databases?

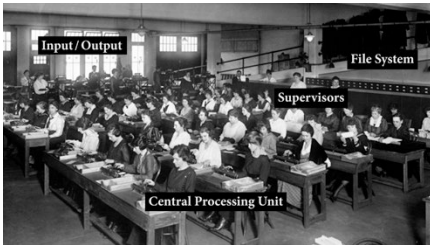
FRANCIS HUNGER: Basically my work over the last years was headed towards technologies and emerging technologies during the Cold War. This included satellites and computers and everything connected with them. Most of this work was retrospective; it dealt with the situation in the East and the West between the 1940s and 1960s. I wanted to be more contemporary; so I thought that databases could be a good start to work on a more contemporary field – it was a strategic decision.

## Interview

L: But in *Deep Love Algorithm* you go back and start telling the history of database-development beginning with the 20th century.

F: Yes, I actually started in the present and went back and back. But in a way it is also my modus operandi as an artist to work with historical stories and then develop fictional stories.

*Deep Love Algorithm* actually deals with the past, but it also pretty much deals with the present when addressing all these notions like post-Fordism.



I was interested in what these characters could be and why they should deal with databases. And one of the characters turns out maybe to be a cyborg. In the work it is only said that she appears to be much younger than she actually is, and she stays at that age. This is most likely a common male phantasy.

I'm thinking of a follow-up to the story: In the next part this cyborg, who was able all the time to change her identity and to continue to live at an age of 27, is getting more and more problems because she leaves more and more data traces and is much more traceable now than she was in the 1970s.

L: Again, what is your core interest in databases? The title of your work is concerned with the algorithm of deep love; so why data and database?

F: From the technological perspective on society, and this is a very narrow perspective of course, databases sit at the very heart of processes that allowed the change from Fordist to post-Fordist production, a change in the general culture that we are experiencing but haven't understood yet. And I got very interested in databases at that moment when I realized that in the Soviet Union and the Eastern bloc, as far as I know, no individual developments of databases took place on their own. In a similar way that they had not developed anything like the Internet – out of paranoia. A computer-scientist had developed network technologies, but they were never spread. And it seems the same could be said for databases.



**I sing a song  
for Henry Ford.**



**I sing a song  
for SAP®**

If we do understand that so-called Real Socialism was basically organized like a Fordist society, we could state that one of the reasons why the Eastern bloc broke down lies in the abundance of certain technological and

economic changes which didn't happen. They didn't change from Fordism to post-Fordism. So the bloc had to break down completely to clear the way for a capitalist setting that allows for post-Fordism. This thought is of course very speculative.

And this led me to trace down further: What is a database – is it really as important as I assume? I'm sure that if I talk to someone who is into biology or ecology, he will be able to explain the same story with completely different arguments, like agricultural changes for instance. But that is my perspective.

L: Why is the database necessary for post-Fordist production?

F: The database-principle, developed in the late 1960s and early 1970s, for the first time allowed us to distinguish between programme structure and data-structure. Before that, often the structure of data which was saved on tape or on punch cards, was directly connected to the software.

The database allowed the saving of data independent of programming and software structure. With it came the random access disc, which also allowed the actual use of databases. Compared to tape that would work sequentially, the random access disc would work unsequentially, and it could read data unsequentially. This was a complete change. From that point on data could become more independent and more flexible. For me this reflects the necessity to have more flexible production processes and more flexible logistics and generally to work much more with data towards what we know now as the social web.

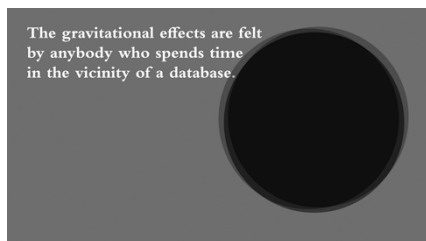
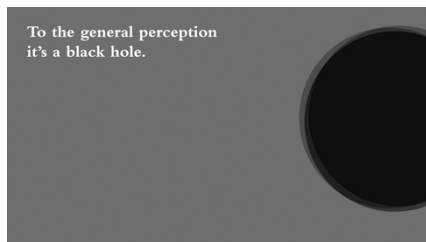
L: Coming back to your film: I wonder what the role of desire is in it. Why is it a love story? Has it something to

*Francis Hunger*

do with a statement you made regarding another work of yours, *Tólpa* (2012): ‘Too complex. I reckon we need a love story. Audiences love love stories.’

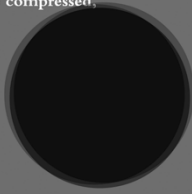


F: Yes, that’s a self-fulfilling prophecy, isn’t it. Actually I think that everything that has to do with technology, and especially the question of databases, is impossible to narrate! It is kind of crazy even to try this because it’s so abstract. So my idea was to have a love story go with it. And then of course desire is something between human beings.



## *Interview*

Time and space are compressed,



Time and space are compressed,  
in accordance with the criteria  
of an algorithm.



The database per se  
remains black.



L: Not necessarily ...

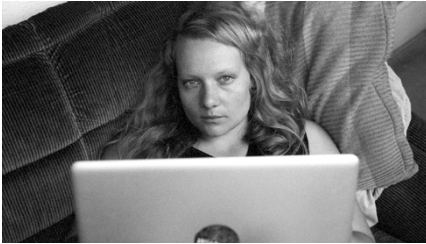
F: Not in the case of this story maybe. But desire is for me something that points towards social change in general. It is not just desire in love, it can be other desires, but that's why the concept of desire is interesting to me.

L: Speaking of desire and social change: I have always wondered why you brought the Situationist into the story.

F: In the art context the Situationists are very much perceived as an artist collective, but I am personally

interested in them as a political, Marxist and Communist group, which they were, especially with Guy Debord. Again, it is about a certain kind of desire. So it felt natural for me to include it.

And in my story these two main characters work differently: While Margret was involved in political struggles and in the case of *Deep Love Algorithm* with the Situationists, Jan never was. She was interested in those political struggles, maybe also not to get bored, because she is living on and on and on. Jan is a journalist, so he has some interest in society, but he is not explicitly political. He is more a child of our times.



L: Do you say that there are no political people anymore?

F: The complete setting has changed and I want at least to give little pointers towards the time: Okay, we have the 1970s, the hard disk is being developed, the computer, too. Computer mouse, keyboard, monitor, networks, satellites – everything is developed in the 1950s to the 1970s, and I wanted to point to that time not only at the technological level but also on a political level. But I wouldn't overrate the Situationist in this story, it is only a small hint. For me more important is this picture of Jackson Pollock, who does his drip paintings.

This happens in that same era. First you see a photograph of him dripping paint and then I take one of his drip

paintings and draw across it sort of a network-scheme with terms on it that point toward post-Fordist production, like ‘networking,’ ‘just-in-time’ and ‘post-national production.’

All the dialogues are written in a certain typography, and still I am very interested in how does the connection of images and texts address our subconsciousness or my subconsciousness.

But I didn’t think through all the possible usage because everything else was thought through so much. So, these images had to be more open.

L: Seeing the drip painting with the overlay I had to think of pattern recognition on the one hand, but as well of male dominance, male role models. Could you say something to the criticism of male role models in the pieces? I see this as an ongoing theme in your work in general.

F: Ah, yes, I keep on doing that! In 2003 I wrote a longer text about computing and gender and also about open-source computing and gender; this was very much disliked by the open source-community at that time. In *Deep Love Algorithm* I am basically making fun of the male engineering cultures that form around technological subjects.

Until now, I very often argued with arguments, but in this case I argued with polemics a lot.

I was very interested in polemics because I had the feeling if I go for arguments – which would be the normative approach –, then the normative approach would always allow to say: Yes, you are right ...

L: ... but.

F: Yes. Somebody will come up and say ‘but ...’ If I simply start to go for ‘shit-fucking engineers, you are



*Francis Hunger*

the worst of everything in the world! You are building stuff that makes people suffer!,' then this kind of 'yes, but ...'-argument is not working out.

And actually I got at an email from somebody who got really angry after seeing the piece. I was absolutely happy about that because I think this is one of the most difficult things for artists to do in our times – to get angry responses.



## INTERVIEW:

### *KERNEL*

*March 3, 2015, 6am Athens' time, 5am Leipzig time.*

*Weather Athens: 18 degrees, sunny*

*Weather Leipzig 7 degrees, partly cloudy*

KERNEL is an Athens-based art collective founded in 2009 by architect Peggy Zali and artists Petros Moris and Theodoros Giannakis. Their practice develops in the intersecting areas of critical research, art, architecture and curating.

We spoke with each other about the installation *Mirrors* (*Scale 021, 027, 028*) consisting of 19"/45U server-rack steel frames, a rack-mounted computer as server and digitally printed silk crêpe de chine textiles (p. 18). For the exhibition at D21 Kunstraum they updated the installation, placing new content on the server and creating a new fabric pattern *Scale 028*, which relates to the new content. During the exhibition KERNEL couldn't come to Leipzig – so we took the chance to talk via Skype afterwards. The connection was pretty bad and our call was sometimes interrupted; so we had to find another infrastructural means to continue our communication.

LENA BRÜGGEMANN: How did you start working together?

KERNEL: We started working as KERNEL in 2009, but we've known each other since 2007. Theodoros and Petros studied at the Athens School of Fine Arts, and Peggy studied architecture at the Athens Polytechnic. We got to know each other through different kinds of projects, and at some point we started to work collaboratively. *Kernel*

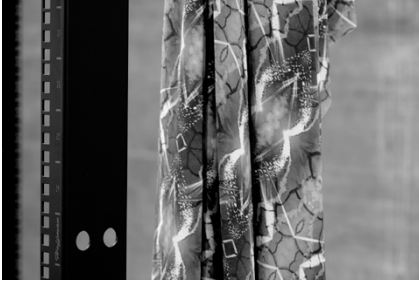
## Interview

was the title of one of our projects. Our first presentation under the name *Kernel* was a curatorial project at *M21*, a project space that was actually our studio in Athens at that time. The title of the show was *Full Operational Toolbox*, and it was about the ways that information can be understood as physical material and how material work could be distributed in the form of information. So we showed work that was created via instructions, through printing and other similar practices. That actually gave us the opportunity to work with almost no budget, however, with artists we were really interested in at that time. We continued with curatorial projects and more research-based work, where we collaborated with other artists' collectives and theorists. In general, our work has an interdisciplinary direction. Eventually, we focused on the translation of this interdisciplinary research into a more installation-based and sculptural output.

L: How did you develop the installation *Mirrors*?

K: *Mirrors* started as a response to the practical necessity of sharing a common research folder among the three of us. At that time we were working towards developing a collectively written piece, a text that we wanted to formalize as a written report. It had a technical character, but it was developed as a poetic text as well. We wanted to collect as much information as possible on economic, political and other social phenomena during the period of 2011. So we were thinking about how we could turn this folder into a publicly accessible interface. We were looking at the idea of an interface as something that could be digitally designed, but also as something that could have a material form.

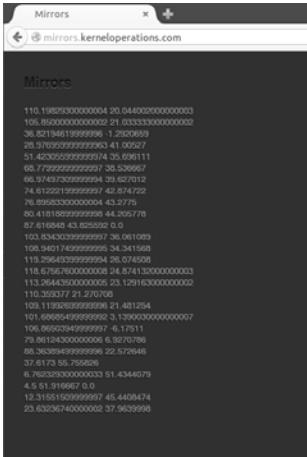
K: It was almost like attempting to create a functional tool.



K: Yes, but at the same time a sculpture that would encode such functions into an aesthetic language. *Mirrors* is an installation composed of server racks. It was a familiar kind of structure for our artistic vocabulary since we had already worked with other modular metallic structures in the past. And it is a type of form that relates to notions of immateriality and invisibility, while at the same time having an actual physical and spatial appearance. We decided to host our shared folder in the server-computer that was mounted on the server-racks. In order to complete the form and narrative of the piece as a whole, we designed a series of silk-printed patterns that acted as abstracted reflections of the content of the server at that point.

L: I really like the abstract patterns. For me they reflect the impossibility to visualize data properly. The chosen way of visualization has a stronger influence as the data behind.

K: We are in general not that interested in an algorithmic translation of data into a visual or a narrative output. We are mostly inspired by information in an abstract way. Even if information is just raw data, it still has an aesthetic aspect. We attempt to follow an intuitive and organic approach of collaboratively composing images that are in dialogue with such abstract material.



L: I love that the installation looks so minimal but if you start looking more closely, it becomes incredibly complex. It is mirrored in several ways: the data of the server is mirrored to other servers. It is mirrored into the pattern of the fabric, and it has an online- and an offline- existence. Where is it exhibited at the moment? Because I looked at the website<sup>1</sup> and I still see the data, not the offline-mode.

K: We maintain alternative remote mirrors of the server that is presented in the installation, which is actually one of the central ideas behind the work. Recently, we opened a solo show in London, which was based on the information that was online when we showed the piece at your exhibition. So we wanted the information still to be visible online. Most of the times the information on the server is accessible only when the work is on display. But this time we let one of our mirror servers to make accessible a 24/7 ghost image of the content that was hosted on the actual sculpture.

L: You wrote me that the data on the server was about new research you did on the *New Silk Road*. Can you tell me more about that? I was trying to figure out the numbers on the website. One can, with a certain literacy, see that the numbers are geo-data. How do you get to these coordinates?

K: Yes, the list of numbers on the server's homepage are actually map coordinates that point to the most common nodes of a new worldwide Chinese logistical project *New Silk Road*. Greece has also been part of this project, being a typical node between east and west. For example, a major part of Piraeus, the port close to Athens, is currently owned by Chinese companies. Parts of these developments are different kinds of new infrastructural projects as well, like private railroads, bridges and other large scale structures that have been changing the suburban scenery of Athens. Being based in Athens the last two years, we became more and more interested in how these global operations are affecting local economies and the local landscape.

The specific coordinates represented by these numbers on the server were then used to produce a video essay. The video develops as navigation from the one place to the other and is subtitled with a narrative we wrote in relation to a specific event that happened at a relevant infrastructural building near Athens some months ago. So, somehow, the server-content of *Mirrors* acted as the material for the construction of one more episode in the overall narrative we are developing through the years. In our work the ideas of time and process are quite central. How and when we disclose information is part of the form of our practice. Sometimes formal gestures come out prior to the disclosure of specific research

information. There is a constant dialogue between documentary practice and processes of abstraction.

We pay attention to the news, to the contemporaneity of the socioeconomic political reality we are part of. But then, there is also a subjective and nonlinear attitude in the way we manage all this information in terms of time and process. Perhaps it has to do with the fact that our work is a dialogue between three people and everything has to go through discussion and also through some kind of digestion, which has its own pace.

There is definitely no intention of real-time response to the events of our times as they are presented by the media. We are interested in perceiving important, contemporary shifts in culture, economy and politics. We have always been looking towards both global and local, expansive and intimate scales. This may have its origins in our working collectively, in having to think and work both as individual entities and as a cohesive system. It's no accident that the patterns of the fabrics on *Mirrors* are tilted *Scales*. They relate to the process of zooming in and zooming out and to the will, the necessity and the reality of changing between scales of perception.



## INTERVIEW

### *PIL AND GALIA KOLLECTIV*

*May 29, 2015, 2:05 pm*

*to June 10, 2015, 11pm Leipzig time*

*Weather Leipzig: 15 degrees, cloudy*

*Weather Prague: sunny and warm*

Pil and Galia Kollektiv are London-based artists, writers and curators working in collaboration. In their work they explore the 20th century avantgarde discourse in its dealing with the transformation of creative work and the instrumentalization of leisure time. They often use choreographed movement and ritual as aesthetic and thematic dimensions, juxtaposing consumer rites and religious ceremonies.

Their video *Co-Operative Explanatory Capabilities in Organizational Design and Personnel Management* is based on an online image archive documenting the history of an early computing company. A distinctive BBC narrator's voice is used to tell the story, which describes the construction and aims of the company. The company adopts highly experimental approaches to achieve high worker productivity as well forming more and more secretive subdivisions which study the work relationships, division of labor and social life of the company. The narrator reveals ever more bizarre details, which lead the company's members eventually to form a religious cult.

For our interview we chose another channel of communication, performing it via e-mail while the two of them were in Prague for a student workshop, examining work at the academy and performing two gigs in the Czech Republic with their band *WE*.

## Interview

L: How did you start working together as *Kollektiv*?

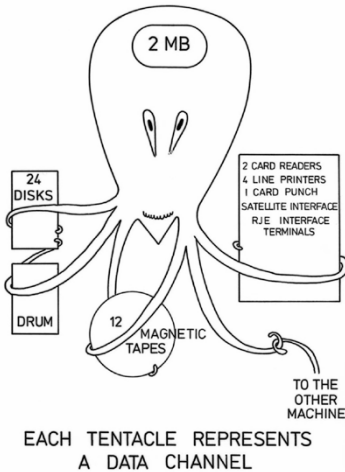
P & G: We never officially started, we met in high-school and just did everything together, so we thought *Kollektiv* was an appropriate surname that described us well.

L: Could you explain a little your way of working and the different fields you bring together?

P & G: Since we met so early we have never really established ourselves in different fields, but for us collaboration is about putting our skills to use for a greater unit.

So, whoever can do a task more efficiently will usually do it, but we are also happy to delegate to others. We often collaborate with musicians, performers, technicians and fabricators. We also like acquiring skills and knowledge as necessary per project. We work across the fields of art, music, writing, curating and teaching, but these things can involve anything from making costumes and sculptures to academic research and logistics, and the relevant skill set changes all the time. That said, nowadays 90% of everything is just e-mail, isn't it.

L: In your work *Co-Operative Explanatory Capabilities in Organizational Design and Personnel Management* you plot a very detailed and dense narrative of the changes from a Fordist to a post-Fordist regime. For this artwork you used pictures obtained from a computing company. I was surprised that there exist so many pictures that you could tell a very convincing story with recognizable characters. How did you find them? And what is the role of the computer and the collection and administration of data? Why did you choose pictures from a computing company?



P & G: We had been asked to make a collage for a publication, and for some time we had been fascinated by the sci-fi figure of the super computer which uses perfect logic to decide to destroy humans. We were interested in the way this figure of ultimate knowledge and reason replaces God in a secular age. We thought we could make a church out of super-computers, so we looked for images online. We chanced upon this insane archive of the work done at Chilton, a place in the UK where they had a huge gallery of high quality images documenting the construction of the supercomputer Cray. Initially, we used them for the collage, but we became intrigued by these recurring characters and the odd scenarios that accompanied the more technical photos, which themselves seemed almost excessive. So we wrote the story that forms the voice-over in the film based on the images and then went back to the images and arranged them so they would illustrate the story.

## *Interview*

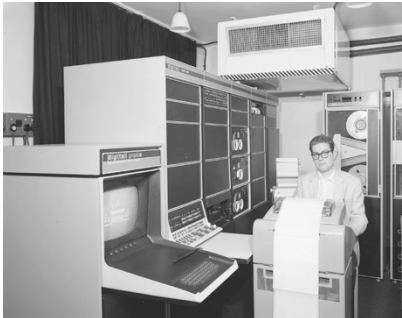
But despite these spurious, almost random origins, we do think the computer is important in telling the story of post-Fordism. As Franco ‘Bifo’ Berardi notes, Fordist workers performed specialized tasks to form an assembly line of fragmented processes, but they were interchangeable. Today, ‘human terminals perform the same physical gestures in front of computers and they all connect to the universal machine of elaboration and communication. Yet the more their jobs are physically simplified, the less interchangeable their knowledge, abilities and performance.’ Our performances of our selves are totally predicated on the possibility of being always on that computer technology. We can manipulate our identities almost infinitely thanks to computer software, so that our creativity is all but subsumed in the process, and we withdraw from the injunction to do so at our peril.



L: This video seems rather unusual compared to your other work in the sense that it uses a very documentary style; I personally needed much time until I would start doubting the story. The other works, which I know, seem to be more absurd at first sight.

P & G: We don't have much commitment to a way of

working. In a sense, this is our most overtly absurd piece, and it is ironic that it can be taken so seriously. But we do often posit scenarios that we find amusing and then try to pursue them to their logical conclusion. This piece required this tone because of our reading of the image archive as exuding that kind of authority. We commissioned a sound ident to start the film to suggest the same kind of old school BBC register as the narrator's voice.



But it is as much a critique of the way this register functions persuasively as it is of the desire to make work as efficient as possible. We are ultimately very skeptical about the way work is valorised by both the left and the right when it is only a means of squeezing profit out of human labor: We think the ideal should be to work as little as possible instead of getting everyone into work.

L: In the middle of the video there is a shift in methods of control, which become invisible to the workers by changing from personal observation to observation by all kind of electronic surveillance, and the approaches to connect work and ritual. Could you tell me why you brought these aspects together?

P & G: Much of our work looks at contemporary life as imbued with ritual trying to pass for rational behaviour,

## *Interview*

and to an extent this is no different. But the real horror in the film isn't the description of some weird corporate cult that is removed from our enlightened lives as artists. On the contrary, we recognize that creativity is easily co-opted by such structures under post-Fordism. As a consequence, we can no longer pit art as a representation of Bohemian freedom against the drudgery of something like office life. Just as workplaces like Google encourage workers to be creative, so being an artist is being professionalized and standardized. Even more so, in our capacity as lecturers we have seen a bureaucratization of academic work that takes away much of the intellectual value of what we do. Our answer isn't to bemoan the loss of a romantic idea of art as freedom, but to look deeper into the eye of the beast. We need to understand ourselves as workers before we can establish any kind of political power, which must be based on solidarity with other workers and non-workers rather than on some exclusion of the artist from the field of work.



L: In the beginning of your video it is recounted that in the 1950s the West, afraid to lose its economic dominance over the Soviet Union, was looking for new methods to increase workers' productivity. So you say that post-Fordism was invented because Fordism was better to maintain in real socialism than in the capitalist countries. In the interview with Francis Hunger, he came up with the thesis that the Eastern bloc had necessarily to crash because it had not been able to adapt post-Fordism to a socialist setting. What do you think about that?

P & G: It is important to remember that the narrative in the film is, of course, completely fictional. But, saying that, although we have exaggerated things that came out of our research, there is perhaps a grain of truth in some of the claims. So we think that there was – and still is – a lot of nervousness in capitalist societies around the issue of worker productivity. This is very evident in the discourse around the economic competition with China, for example. But more generally, we think that neo-liberalism should be seen not only as a programme to dismantle the welfare-state but rather as a more radical and ambitious programme to redefine surplus labor. Many commentators read the current late-capitalist ideology only as a violent reaction towards the uncomfortable compromise achieved after the Second World War as a result of the American fear of the spread of Communism to, say, southern Europe. This is why the soft social-democratic project of the 1950s and 1960s, built around unionism and state subsidies for Education, Health etc., became unnecessary after 1989 and was replaced with the bizarre neo-conservative model of the aggressively interventionist but lean (in terms of taxation) state.



But a more important aspect of post-Fordist capital has been a move to reorganize the labor force and to expand the definition of what productivity (and hence surplus labor and capitalist profit) could mean. Marx was already aware of this in the late 19th century when he demonstrated how, with improvements to factory machinery and the need for fewer factory workers, the capitalist owners simply expanded their work force of domestic servants. The underlying logic is that for capital to function there is only a need for surplus labor, but what is produced or done as a service is far less important. In short, post-Fordism is the reorganization of manufacturing surplus labor through a re-thinking of what work is. If labor is defined not just as what you make with your hands but as a whole package of cognitive, linguistic, personal and social actions, then surplus labor can be redefined completely. We think that in historical terms a major event that fueled the transition to our current post-Fordist structures is the oil crisis of the 1970s, where the western manufacturing economies realized how dependent they are on raw materials from the Middle East and how exposed to catastrophe they are.



As for the Eastern Bloc – although many people have indeed pointed out that the eastern economies were unable to compete with the emerging Toyota-ist model of factory flexibility, particularly in countries like Romania, who insisted on old-school heavy industries, the real success of a new worker model is found in China. The Chinese system is based on an almost impossible balance between Fordist control, of time, the body etc., and flexibility, force and deregulation. Ultimately the ability of the communist world to organize labor on a mass scale with the addition of very quick response time to changes in manufacturing has proven to be the key to success in terms of current capitalism.



# WORKSHOPS



# SURPRISE AND EXPERIMENT – TWO WORKSHOPS THAT DEALT WITH DATA BASES

*FRANCIS HUNGER*

Is it possible to conduct a workshop that deals with data bases and is not primarily technical? Yes, it is. You've just got to bring the right crowd of people together. What I find extremely rewarding about workshops is that they have the potential to be truly surprising. Let's face it; with an exhibition you'll be surely able to explore new and exciting directions, but the form will almost always have to be a work of art with the subsequent necessities of arranging setting and perception.

The same can be said about a symposium; the format is obvious and the talks will be interesting or not. However, a workshop can turn out to be extraordinary because it is not just about those who lead the workshop – for the sake of simplicity I'll call them the teachers – but also very much about the participants and the way in which they interact with each other.

When I was approached by D21 Kunstraum not just to participate in the exhibition but to co-operate as well on the workshop and symposium, my major question relative to the workshop revolved around whom to invite to 'teach' as a truly remarkable one. Who has the capacity to draw an 'explosive' crowd of participants? After very positive earlier experiences I turned to Heath Bunting, of the international net.art-born, hacktivist collective irational.org, and and to WaiWai, an artist, friend, and collaborator at irational.

“42 years old from birth / 63 kilos in weight / a Bank of England creditor / able to accept terms and conditions

## *Surprise and Experiment*

/ able to access the internet / able to bathe myself” is the way Bunting describes himself in his work *Artist's self portrait*. Along a somewhat different line, co-irationalist WaiWai states: “WaiWai is a formally trained artist, self-taught programmer and a witch in training.” A witch in training and a person able to bathe himself – that was a good beginning.

So, an open call was issued for participants, who by the way were asked to state why they'd like to participate.

Heath's workshop worked with the database and its consequences. “Within this workshop we'll construct a new (natural person) identity or an anonymous (artificial person) corporation using and further developing his own Status database and other material.” The workshop was open – with the participants' input – also to talk practically about how to build and use databases and/or how to visualize data both from inside and outside databases. This is in no way a technical workshop although it may involve some kinds of technology. It is about ideas, sharing of knowledge and questioning the invisible aspects of the database,” he said.

WaiWai's workshop was directed at the question of how one can disappear from databases, how to become invisible and dissolve the data-traces that could potentially be stored in databases. “Given that more and more details of us individuals get collected in several databases, e.g., surveillance and corporate, it would be interesting to learn how to try and escape them. This might lead finally into the woods, but maybe an escape is also possible within the city or even while being online. The main focus of the workshop would be understanding how dependency was developed by a fabricated system to its users, and how we can free ourselves from the

database through extracting resources outside of the default routing, e.g., sourcing fire, water, food, network outside of the system.”

My experience shows that workshops like these tend to not produce immediate outcomes, but this is actually a quality in itself. These workshops rather plant seeds that need their time to develop, to grow. They are in the best sense influential because they imbue both participants and teachers with a potential which naturally with delay starts to blossom in individual artistic practices by inspiring collectives and through trickling toward an interested public.

I'm very glad that the D21 Kunstraum provided the artistic, administrative and spatial frame for the workshop and would like to thank all the D21-volunteers who helped to make it happen. As well I'm thankful for our many friends who opened their flats to accommodate the participants. Still further, I'm grateful to the participants for their inspiring presence and for their motivation in creating an atmosphere of exchange, fun, and concentration. Finally I'm most grateful for our workshop-teachers' WaiWai and Heath Bunting having done what they did – inspiring, exploring and provoking the unexpected.



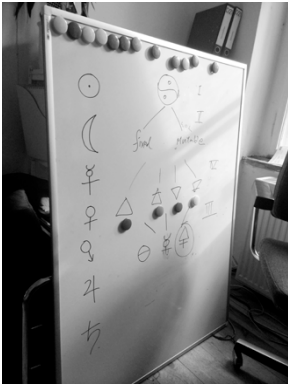


# DATABASE MAGIC

*CESCA GOLODNAYA*

When I subscribed to WaiWai's workshop, I understood that it was a deeply romantic idea to follow the question of how to disappear from surveillance and databases. It was clear from the beginning that this approach of hiding from surveillance cameras, leaving the urban environment, but also seeking magic in the digital is highly speculative. But this speculation is what actually drove me to participate. We the participants followed both Heath's and WaiWai's introduction and subsequently divided up into groups with a rough plan. I was curious: Would it be possible to become digitally invisible, to disappear, to erase my own daily digital traces? How could this be possible, and what of the magic about which WaiWai spoke in her introduction?

You may well expect me to give a full account of what happened during the workshop, but there was a lot going on that cannot be described in written form, most importantly the intermediate talks between participants. I even suspect somehow that these informal situations were more important than the formal part, since WaiWai always supported them and engaged in them intensively. On the other hand it turned out that magic often happens when least expected. For me personally, for instance, it occurred in the woods when we were collecting timber for a campfire. It was autumn, wet from the rain the day before, but the air was warm and the city sounds came faintly from afar – that's when the magic happened to me, and yes, more so than when we actually brewed a magic potion.



But let's first get things into temporal order. On the first day we went for a city drive to observe and discuss issues of surveillance and data recording that do occur, surround us, and need our active participation as well in creating them. The internationally mixed participants were adding their own perspectives to what we saw in Leipzig; so, we walked not only through Leipzig city but symbolically also through London, Warsaw or Hong Kong. This changed the local perspective because the respective levels of data collecting differ. In Germany people used to pay in cash, leaving traces at the ATM, and now increasingly through "services" like the so-called electronic loyalty Payback Card. In Hong Kong or in the US payment through credit/debit cards is prevalent, making it easier for data aggregators in their tracking of the everyday anarchist, who is at the same time trying to disappear from their radar.

Camera surveillance is not widely developed in Leipzig, since on the streets fewer public cameras were to be found than in London. Still, one finds them used in

great numbers in Leipzig's public transport system. In Leipzig there seem to be highly contested hot-spots of CCTV, as for instance at the Connewitzer Kreuz, where a prominently placed camera was fought by the local alternative scene. How can you change your appearance so that a surveillance camera coupled with face recognition algorithms cannot recognize you? Artist Adam Harvey at least seems to have found an answer with hair looks that make your face unrecognizable. No, he did not participate in the workshop.

Did I mention smartphones? Switch them off! Better yet, throw them away. Smartphones should be renamed as, yes, the pun is fully intended, STD – Singular Tracking Device.

As we moved on through town towards a hot tea in one of the participants' flats, we discussed less obvious instances of data tracking and collecting, such as RFID tags in passports, libraries, or shops, all kinds of electronic tracking, such as usage of anything having a visual display or some sort of input that works with an electronic card, like ticket vending machines, ATMs, parking houses. Had we visited Amazon, which operates a huge logistics warehouse employing hundreds in Leipzig, we would have come across the tracking that is involved in any kind of logistics but is used also for surveillance and quantifying of the workforce. ... I'm getting paranoid now.

So, the next day brought bright, warm sun, but everything was wet from days of raining before; we met at a tram station, a bunch of people that might have formed

a small, instant demonstration against surveillance. But we didn't. Instead we loosely strolled out of town into an area that some would call nature or woods, but even that turned out still to be part of the town. Here we were to get the tip of the taste of WaiWai's experience of actually having lived in the forest for months in a self-built shelter. In a kind of survival style she was a squatter on a small patch of land, built her artist studio in a tree-house, and explored the woods' natural resources in order to live simply from them, but this was also an artistic experiment. I was impressed. The next town would be a two-hour walk away; so, to charge a phone or computer in the public library she would need to walk for four hours. Asked how many hours a day she needed for life maintenance – collecting food, water, wood for fire and so on – she estimated about eight hours each day. As it turns out, the reality was not all that romantic as it could get cold and stormy, and she needed to get accustomed to wild animals strolling around, such as a neat mouse looking into her eyes on her waking up in the morning, probably having tested her food storage during the night as well. I was still impressed.

Funny detail: During part of that period WaiWai kept on working in an electronic store, selling washing machines, toasters and such in a perfect seller uniform. So to speak, she hitchhiked back and forth between her workplace and her refuge in the woods.

We were to experience a very compressed version of her experience, collecting wood and leaves to build a shelter and trying to find dry wood to make a fire. Since we had brought some food, it was a good time to get more

romantically involved and share the food, from potatoes to red cabbage to sausages, which we prepared over the fire. Yes, civilization was still with us, and it was obvious that today's undertaking had probably taken the escapist road rather than the survivalist. Late afternoon saw me strolling back to the city to see what the other participants were up to while the question was discussed as to whether our group should stay in the woods overnight. No, not for me.



The third day saw us back in town exploring urban natural resources and preparing a magic potion of mixed ingredients under WaiWai's witchy guidance. A magic potion suggests great potential to leave totalitarian, rationalistic, algorithmic database space. Depending on the ingredients, we could potentially enter love space, magic wonder space or psychedelic drift space.

On an obviously unused small patch of land between two houses at a street corner, and on another herba-ceous patch of land in Leipzig's West, the so called

## *Database Magic*

Jahrtausendfeld (Millennium Field), we looked for, identified, and collected weeds that could make up the basis of the magic potion. Clover, sagewort, sorrel, birch, and stinging nettle were the more easy to identify and the group shared enough knowledge of how these could be consumed and how they taste. But we came to more special weeds as well, which could be identified through a botanical guide that somebody had brought along with her. WaiWai added her magical knowledge, that, as she told us, stems partly from healers, witches, and shamans she has met, partly from experiments on herself and partly from a collection of occult and alchemy e-books which she stores on her laptop.



For the magic potion we were mainly working with the Hermeticist methodology, which was widely practiced in Europe until the chemical revolution in the 18th century. The principle is to use the knowledge of alchemy and astrology to manipulate *Body* (Matrix), *Soul* (Consciousness), and *Spirit* (Energy) of the plants and the users. By identifying the elements of the plants (from Fire to Earth, from Sun to Saturn), we were able then to design the property of the potion, combining similar elements. Of the ingredients I can only remember red

clover, birch and a touch of tansy, but there must have been more. No recipe was written. We then followed a set of rituals guided by our hacker-magician WaiWai. As we were not trying to make philosopher's stone, we simply made an infusion by slowly cooking the plant until a third of the water had disappeared. With the adding of some honey a magical potion was prepared and digested.

With that the workshop came to an end, and after Heath Bunting's and WaiWai's public presentations and that of the workshop's results we dove into a night of debauchery, anarchism, birthday party or simply sleep – while the world's databases and algorithms kept collecting and capitalizing on our data.





# ASSUMPTIONS ON THE CREATION OF AN ANONYMOUS ARTIFICIAL PERSON IN TIMES OF THE DATABASE

*DANIEL PAUSELIUS*

*“Our identity is constructed as human beings who can possess one or more natural persons and control one or more artificial persons. The higher up in the class system, the better the access to status variety.”* Heath Bunting

During a workshop with the British artist and activist Heath Bunting, we investigated the process of creating an anonymous corporation in respect of his status project<sup>1</sup> and its vast, growing database of the British system and related identities.

In his project, Bunting has collected so far more than 10,000 entries of possible characterized attributes of an identity and organized them into a growing database of individuals and organizations. The characterization was put into a mapped binary set of relationships and dependencies and personal attributes which lead to advanced attributes. The resulting graphical diagrams sort the attributes and create a somewhat comprehensive idea of how basic parts of the identity build-up to more specific attributes and lead to advanced skills or abilities. As an example might a human-being, which is able to provide a name, a place of birth and a date-of-creation gain a certificate of birth, which might lead to a social security number, id-card, accomodation and so on.

Identities are sorted into three main categories: the human being, i.e., the natural person, and the artificial

person, i.e., the corporation, where the human being can possess one or more natural persons and can control one or more artificial persons (corporations). Human beings are separated into lower class, who possess “one severely reduced natural and no artificial persons”; middle class, who are in possession of one natural and one artificial person (corporation), and the upper class, who are in possession of “multiple natural persons and in control of numerous artificial persons (corporations) with skilful separation and interplay.” This framework is key to understanding the investigation of the project and its rather binaric-technical approach to visualize the technical approach that ubiquitous databases take in sorting out the attributes of human-beings.

Based on Bunting’s investigations, he started on compiling his own “unused but established British natural person,” an off-the-shelf identity as bought for 500 GBP.<sup>2</sup> This off-the-shelf identity comes with an assortment of physical objects such as personal business cards, an air-miles card, t-mobile and vodaphone top-up cards, and plenty of other merchandise which make up a lawful British identity.

In contrast to Bunting’s observations are anonymous, commercial structures, which, as he told during the workshop, “we know to exist, which are visible, but nobody has a clue who runs them.” An example of imperial nature would be the ‘Empire of the United States of America,’ but this cascades downward to certain websites without proper contact or the thousands of shell companies, off-shore or not, founded to shade ownership and operation of assets or companies, complicate liability claims, or simply launder money raised by criminal means.

The main goal of the workshop was a better understanding of these mechanics and hands-on experience in the creation of a lawful, anonymous corporation in the process. We founded the Bircas Institute as an investigation of anonymous corporate structures and their potential in the field of contemporary arts.



BIRCAS, the Beukelaer Institute for Contemporary Arts Studies and Strategies (Ltd.), is primarily a theoretical arts institute represented by its founder Jan-Otto de Beukelaer (JOB), an artificial person based on the narrative of an art theorist turned into an undercover strategy- and career-consultant for the soon-to-be famous contemporary artist working “on the borders of contemporary art in context and the commodified artistic identity.” The consultancy of the institute includes the production of reviews, critique, numerous blog-entries (on numerous anonymous contemporary art blogs) and references on social media. Advanced services include the production of paperwork, i.e., leaflets, invitations and exhibition catalogues within the prestigious institute’s virtual gallery. The key to the success of the project is the anonymity of the members of the Board and the institute’s directors, who are able to act in the name of Jan-Otto on their own and can, therefore, with the

manipulation of anonymous identities build up a vast network of references for themselves, the fictive Jan-Otto de Beukelaer, and the client, i.e., the artist and his to-be-improved artistic identity.

Acting according to the corporate practice of international anonymous artificial persons, the work of the institute takes a close look at the gaps and corners one can use to form such a lawful organisation while remaining an anonymous natural person or group of persons. Our duties involved following a succession of actions culminating in a reputable and possibly respected identity in the field. As in the process of establishing an unused natural person, we had to follow guidelines within the lawful limitations we set for ourselves in the process. First was the creation of an email-account, which freely allows the use of an unused natural-person; next would be the creation of a website, business cards, social media accounts, and correspondence within this framework to cultivate the identity in interaction with other natural persons. Important was the creation of an offline identity as well, thus creating the impression which a respectable natural person would leave. This includes a business address, an material postbox, an office telephone number, and the most vital part, a credit card to execute payments for the more advanced requirements of the new identity.

The time frame of the workshop was limited, as were the financial resources of the participants. Corporate practice in the creation of an anonymous corporation lies in just calling up a law-firm to form a new company and nominate some directors, where there is the legal

On 06/19/2015 10:17 AM, Otto-Jan Beukelaer wrote:

Dear Lena,

thanks for asking, it's a pleasure to introduce BIRCAS Institute to you and your clients and customers. As a personal and long leading partner to the arts and the artists do we feel committed to the highest degree in customer relations and loyalty.

Founded in 2014 in the D21 Kunstraum in Leipzig, is the Bircas Institute for Commercial Arts Studies and Strategies Ltd. an anonymous Institution devoted to the investigation in service to the emerging and established artist with a clear vision on success in the art world. As a leading institution in the area is our primary Goalthe theoretical, practical and ideological support on a long term basis. Generations of successful artists stands for utmost customer Satisfaction in our name.

The Story of BIRCAS is a story of Success, supported and run by contemporary art professionals with of years priceless expirience in the contemporary art world, its networks and beyond. Working on the membrane between contemporary art in context and the commodified identity of the artist, do we give a clear perspective on the open oppurtunities in the field. We have the keys to the front AND back doors of the art world!  
If you are interested in our concept just let me know!

with warmest regards,

ODB

---

Otto Jan de Beukelaer  
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06/19/2015 01:01 PM

possibility to handle this action in an uncomplicated manner. This isn't restricted to far-away offshore islands; the creation of such shell companies is condoned in most states of the USA and elsewhere.<sup>3</sup>

What comes into view is that in relation to Heath Bunting's status diagrams, a 'horizontal progression' emerges as the unused identity undergoes a buildup of its reputation. Starting with a Goglemail-account as its only identification is not likely to be sufficient to open a website with most providers. A Ghanaese or Tuvaluian Webpage might arouse suspicion in contact with business partners. The same applies in the commercial field of anonymity, where a company in Panama might not be as reputable as a Delaware company with a US-mainland telephone number and a business address. Juristically, all companies or persons might be equal respectable business partners, but the impressions of reputable aspects make some "more equal" than others.

To stay with the theme of lawfulness might take up more time in the process, as everyone who is able to provide a name with date and place of creation is able to obtain a birth certificate, which enables the obtaining of other documents of identity connected with being human. Anyhow, essential to the creation of a new natural person is the building up of the aspects of identity in a lawful manner, that is, the adding up of attributes of the identity. A natural person's identity is not only made up of an email or facebook account. Without being able to name a favourite music album or a favourite eye colour in a complex set of relationships built up over a long time, normally referred to as a lifetime.

Various views of this work might provide a thorough understanding of how anonymous artificial persons (corporations) stand in their constant interactions with us as human beings and natural persons, to wit: the creation of a new natural-person to which human rights apply. A main innovation of Heath's work might be a "domiciled anonymous artificial person (corporation) which allows people to live in their homes anonymously."<sup>4</sup>

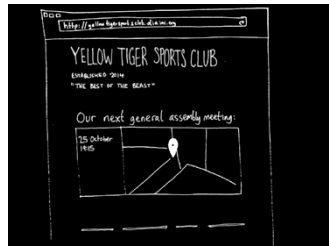
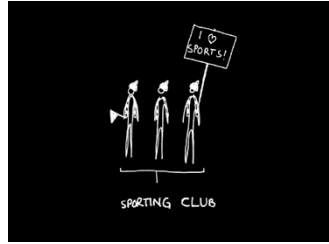
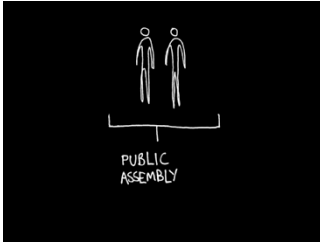
### Notes

- 1 See <http://status.irational.org>
- 2 See [http://status.irational.org/identity\\_for\\_sale](http://status.irational.org/identity_for_sale)
- 3 Global Shell Games: Testing Money Launderers' and Terrorist Financiers' Access to Shell Companies, see [www.griffith.edu.au/\\_\\_data/assets/pdf\\_file/0008/454625/Oct2012-Global-Shell-Games.Media-Summary.10Oct12.pdf](http://www.griffith.edu.au/__data/assets/pdf_file/0008/454625/Oct2012-Global-Shell-Games.Media-Summary.10Oct12.pdf)
- 4 See [http://status.irational.org/visualisation/maps/A1141\\_a\\_human\\_being\\_in\\_control\\_of\\_an\\_artificial\\_person\\_domiciled\\_bw\\_flow.pdf.html](http://status.irational.org/visualisation/maps/A1141_a_human_being_in_control_of_an_artificial_person_domiciled_bw_flow.pdf.html)





# DYNAMIC INCORPORATION ASSOCIATION



A sketch for a mobile phone app by Matt Guy, Kloschi, Michaela Lakova, Ollie Palmer and Giuditta Vendrame that will outwit the letter of the British right of assembly, which declares an assembly of more than three people in a public space as an illegal demonstration. The app connects the mobile-phones of people standing nearby, declaring them to be participants in a corporation meeting.



# SYMPOSIUM



# A NEW DIGITAL PURITY? ON ARCHITECTURES FOR DIGITAL IMMATERIALITY

MARCUS BURKHARDT

The past decade has witnessed the arrival of a new savior – the savior of big data. By means of combining and analyzing unprecedented amounts of data, it promises new modes of knowing the world and knowing ourselves. As early as 1979 Jean-François Lyotard diagnosed the emergence of this new mode of knowledge production, which relies on the resourceful arrangement of data:

*“As long as the game is not a game of perfect information, the advantage will be with the player who has knowledge and can obtain information. By definition this is the case with a student in a learning situation. But in games of perfect information, the best performativity cannot consist in obtaining additional information in this way. It comes rather from arranging the data in a new way, which is what constitutes a ‘move,’ properly speaking. This new arrangement is usually achieved by connecting together series of data that were previously held to be independent. This capacity to articulate what used to be separate can be called imagination.”*  
(Lyotard 1984:51)

Even though the many virtues of the knowledge regime of big data that relies both on the radical accumulation of ever more information and its continuous analytical processing can hardly be contested, a critical understanding of the epistemological and ideological underpinnings of the current big data discourse is needed. The following paper is concerned with one of those

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ideo-epistemological roots upon which big data's promise of salvation is based. My goal is not to debunk the current hype but to ask for the socio-technological conditions of an imagined digital purity, that is, of raw, autonomous and immaterial data, which is at the core of big data and which takes shape as a new data essentialism.



Figure 1: The Enterprise Administrator  
(Anonymous 1974)

I want to approach this question by starting somewhere and sometime in between. This beginning has no exact date. Yet its location can be exactly specified. The point of departure of my reflections is located in Box 18, Folder 23 of Collection 125 – the *Charles Bachman Papers* – in the Charles Babbage Institute for the History of Computing, Minneapolis (see figure 1). The folder contains a letter sent by the database pioneer Charles Bachman to the *Special Interest List on Database Management* on

June 25, 1974, informing the List's subscribers on the current efforts undertaken by ANSI/X3/SPARC Study Group on Database Systems. Attached to Bachman's four-page newsletter is a rather odd and somewhat funny image.

On first glance it appears to be an advertisement for database technologies and technicians. However, at second glance it seems to become obvious that it is a parody or – to put it another way – it appears to be an inside joke of the nerdy database community of that time. Since this image is enclosed in the letter without being put into context and with no indication of its source, it became to me one of those strangely fascinating and thought-provoking artifacts that can be found in traditional historical archives. Taking that into account that there is no history to be told based on this picture, but it can serve as starting point for thinking about the logics of database technologies.

The enterprise or database administrator as depicted in this image is one of the superheroes of the digital age. Being 'wise,' 'mature,' 'modest' and 'fast' he is able to supply his customers with a solid and expandable knowledge and information base. Dressed in the typical costume of a superhero, the database administrator hides his identity but saves the day. What is most striking about this depiction is that it reveals the dirty little secret of the administrator's superpowers: on the inside of the cape an information model is drawn. Ultimately, the modeling of information renders it possible that data can be stored in computer databases independently from its future uses in specific applications. This goal had become known in the late 1960s early 1970s as the struggle for data independence.

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In 1974 Bachman referred to data independence as one of many “nagging problems” (Bachman 1974:17) in the development of database management systems. The widely recognized objective of separating the management of data from its use in various contexts of application, i.e., from their processing in different application programmes it was a rather abstract goal that needed to be translated in precise engineering problems. As a consequence, data independence turned out to be a fuzzy buzzword for a wide array of different dependencies that ought to be dissolved by powerful database management systems. Here we should name just a few: the physical dependence on specific storage structures and devices, the logical dependence on a specific information model, the dependence on certain integrity and consistency rules, and the redistribution dependence of vast databases which do not just run on a single computer, but on a number of independently operating computers (cf. Codd 1990:345ff.).

The underlying motive of the struggle for data independence was to protect the “investment in data & programs in a changing business & computing environment” (Jardine 1973:2). In other words: information needs are not static but rather change over time and in different contexts of use. The same holds true for the hard- and software database technologies relied upon. These ever changing requirements, combined with rapidly evolving technologies, posed an enormous challenge since application programmes were and in many cases still are dependent on the way in which the required information is stored in computers. Against the background of today’s digital media culture, it is somewhat difficult to put oneself in the position of early day database developers and to understand the basic problems they faced.



INITIAL ORDER CARD TRANSFERRED TO TRACK W		CUST NO	CUST ORDER NO	ORDER DATE (MM/YY)	ITEM 1 FROM QTY	ITEM 2 FROM QTY	ITEM 3 FROM QTY	ITEM 4 FROM QTY	ITEM 5 FROM QTY	ITEM 6 FROM QTY	ITEM 7 FROM QTY	ITEM 8 FROM QTY	90	91	92
CUSTOMER DISK RECORD TRANSFERRED TO TRACK X		CUST NO	CUSTOMER NAME		ADDRESS				CITY, STATE				93	94	95
ITEM DISK RECORD TRANSFERRED TO TRACK Y		ITEM NO	ITEM DESCRIPTION		UNIT PRICE	QTY MADE	QTY ORDERED	QTY BASE	MIN QTY	FROM QTY	FROM QTY	FROM QTY	96	97	98
CONSTANTS & LEGENDS RECORDED ON TRACK Z		01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00													

Figure 2: Exemplary plan for the allocation of data on a hard disk storage track (IBM 1957:17)

As an example, think about hard disks as means of storing information. Today, with elaborated file systems or database applications, end users do not have to worry about where their data is physically stored on a hard drive. But when IBM introduced this storage technology in 1956 its users had to know the exact location of data on the 350 Disk Storage Unit, which was part of the 305 RAMAC system, in order to be able to access the desired data. For this reason it was recommended by IBM to their customers to plan the use of the storage allocation beforehand on paper as depicted in Figure 2. Against the background of digital storage technologies, the collection, management, and retrieval of large amounts of information in digital databases take shape as an addressing problem. The seemingly simple question that needed to be answered by database developers was where to put the data automatically and how to retrieve it again. Bachman was faced with this problem in 1962 while developing the Integrated Data Store – in short: IDS – which is commonly considered as one of the first database management systems. The solution to the addressing problem he proposed brings us back to the superhero and his secret weapon:

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*“This benefit is gained through the structuring of the information itself to permit both associative and multi list referencing of records. This is the means by which the mass memory’s ability to retrieve any specified record is translated into the ability to retrieve exactly the information needed to solve a problem. [...] The problem given to the IDS is knowing from which pigeonhole to retrieve the required record”* (Bachman 1962:IIB-4-3)

Yet this secret weapon hidden in the super hero’s cape seems to be a secret lacking secrecy. It is well known that computers have a hard time understanding the data they process. Inside the computer everything is encoded as binary data. It boils down to ones and zeroes, which represent character strings with no obvious meaning to computers. That “John Doe” is a name or that the string “19991231” refers to the date December 31st, 1999 has to be made explicit to computers by describing data with metadata. The structuring of data according to an information model is a common means of making implicit meanings explicit to computers. But structure alone does not suffice for solving the addressing problem in the context of digital databases. The descriptive logic of placing information in the structure of an information model needs to be accompanied by effective procedures for storing, retrieving, updating and deleting information in a database (cf. Bachman 1966:225). This procedural logic determines how information can be handled within computers and how it is put to practice in our emerging database culture. Even though the importance of this cannot be overstated, this paper is concerned with a different question. It aims to show how the gradual solution of the problem of data independence led in recent years to the emergence of a new data essentialism, which resurrects

the “transcendental signified” that Derrida (2001:354) among many others put to rest since the 1960s.

Today the transcendental signified takes the shape of the database, which serves as “privileged *reference*” (ibid.:361) interrupting the otherwise infinite “play of signification” (ibid.:354). And the data contained in the “buckets full of facts” (cf. Haigh 2006:33f.) called databases appears to be pure, raw, and autonomous. Of course “raw data is an oxymoron” as Geoffrey Bowker (2005:184) famously stated, but the imagination of digital purity prevails in the recent hype around big data.<sup>1</sup> Big data, however, is just one recent example for this imaginary, whose origins in the context of digital technologies can be traced back to the early years of database development. The subsequent media historical observations aim to underpin this claim by focusing on the debates over how specific information models have to become operative within database systems in order to solve the addressing problem and to ensure the independence of data management from its processing in particular application programmes. This question leads to the efforts undertaken by the Data Base Task Group affiliated to the Conference on Data Systems Languages<sup>2</sup> – in short CODASYL – and by the Study Group on Database Systems initiated by the Standards Planning and Requirements Committee of the American National Standards Institute – in short ANSI/SPARC – to develop an architecture of database management systems.

In 1969 the CODASYL Data Base Task Group advanced the proposition that database management does not rely on just one information model, but on two separate levels of modeling information labeled schema and sub-schema. Thereby, two ways of looking

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at information were distinguished. The schema describes the way information is stored in the database, whereas the sub-schema defines the way in which the database appears to a specific user group or application programme: “The concept of separate schema and sub-schema allows the separation of the description of the entire database from the description of portions of the database known to individual programs” (CODASYL Data Base Task Group 1969:II-5). Within this architectural framework a database has one schema, but for each schema multiple sub-schemas can be defined which have to be compatible with the database schema (see figure 3). The differentiation of the two levels reflects the competing needs and expectations of different interest groups within CODASYL as William T. Olle stated in 1978 in a retrospective:

*“The arguments which were raging during the years 1967 and 1968 reflected the two principle types of background from which contributors to the data base field came. People like Bachman, Dodd and Simmons epitomize the manufacturing environment [...]. Others, such as those who had spoken at the early 1963 SDC symposium, and indeed myself had seen the need for easy to use retrieval languages which would enable easy access to data by non-programmers.”* (Olle 1978:3)

This dispute between engineers and end-users led to the proposal of the two-level database architecture, which must be recognized as a meta-model of information modeling in digital databases. Whereas in the definition of the schema's and the sub-schema's different views of the same information are made explicit, the differentiation between these levels serves as a model

of the information flow between the user interfaces and the storage devices. That is, according to this model users do not directly interact with the data storage, but interface with the database through various application programmes by relying on sub-schemas that are mapped on the database schema, which remains hidden from the user.

With regard to the problem of data independence, the CODASYL database architecture quickly proved to be insufficient because in the definition of the schema the conceptual description of information is superimposed by their material organization in the storage: “The schema describes the database in terms of the characteristics of the data as it appears in secondary storage and the implicit and explicit relationship between data elements” (CODASYL Data Base Task Group 1969:2-2).

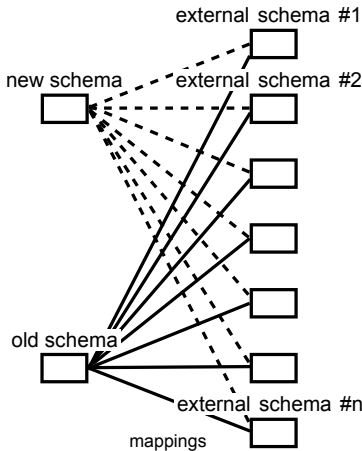


Figure 3: Schema Mapping in the CODASYL Two-Level Architecture (Bachman 1975:570)

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As a consequence each change in the ordering of information on hard drives was in fact a change in the schema that again made it necessary to realign the mappings between the schema and its sub-schemas.<sup>3</sup> Shortly after the CODASYL Data Base Task Group presented its final report in 1971 the Standards Planning and Requirements Committee of the American National Standards Institute – in short ANSI/SPARC – founded the Study Group on Database Systems whose task was to determine possible areas of standardization in the field of database technologies (cf. Bachman 1974:16).

Building on the results of the CODASYL task group, a three-level database architecture was developed, distinguishing between the external, the internal and the conceptual views of information stored in databases. According to Bachman the external view or schema is equivalent to the sub-schema of the CODASYL proposal and the internal view as well as the conceptual view are related to the schema. Accordingly the ANSI/SPARC Study Group proposed a more differentiated view on how information is stored in the computer and how its meaning is made explicit to the machine. Whereas in the schema of the CODASYL architecture the semantics of information was enmeshed in the “layout of physical records” (National Institute of Standards and Technology 1993:54), the ANSI/SPARC architecture proposed the separation of the conceptual description of information from its physical arrangement in storage. The semantic structure and the storage structure of a database are considered to be different levels of looking at and dealing with information. As a result the direct mapping between a schema and its sub-schemas is transformed into a two-step process of translating between the internal logic of

computers and the external logic of human users, respectively, between the logics of data management and data processing. In the opinion of the members of the study group this constitutes a certain indirection that is “essential to data independence” (Tsichritzis/Klug 1978:184).

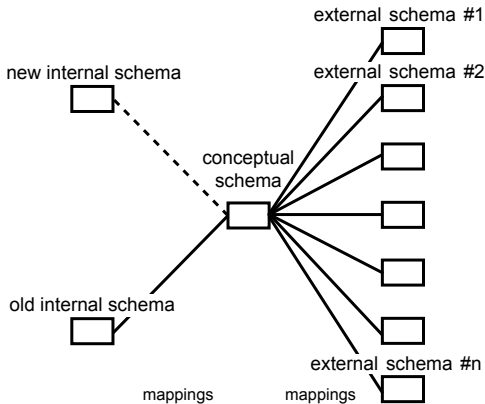


Figure 4: Schema Mapping in the ANSI/SPARC Three-Level Architecture (Bachman 1975:570)

To date this architecture serves as a conceptual but idealized framework of thinking about and designing databases. Almost every basic textbook on database technologies starts by outlining this architecture. Yet in contrast to the original visualization in Figure 4, today the diagram is typically rotated by 90 degrees, thereby emphasizing the flow of information between the surfaces of multiple user interfaces and the invisible depth of the database (see Figure 5). The lasting significance of this architecture is mainly due to the fact that within this meta-model of information modeling the exact

level is identified on which the structural explication of the information model becomes operative. The secret weapon of database administrators is the conceptual schema, which is situated in between and serves as mediator between the internal logic of the binary data representation in the storage on the one hand and of the external human uses of information on the other hand. Hereby the external and internal logics of handling vast collections of information are insulated from each other.

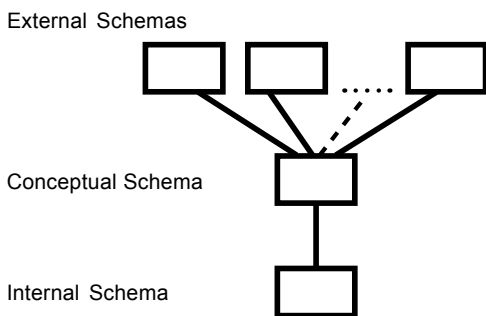


Figure 5: Typical Visualization of the ANSI/SPARC Three Level Architecture

The conceptual schema allows for the automatic storage and retrieval of information in databases because it serves as translator or intermediary. Or, to put it another way, in order to serve as a powerful means for the management of digital information, the conceptual information model has to operate in between and at best must enable the automatic translation of queries submitted by users into effective retrieval routines that can be executed by computers. This is done by database



management systems which are usually designed to describe and handle information according to a specific data model. For approximately 30 years the relational data model and, accordingly, the SQL data definition and manipulation language have been predominant.<sup>4</sup> Even though the notion of database systems seems to be equivalent to relational systems in today's digital media culture, the relational modeling paradigm unfolds its efficacy and importance on the basis of ANSI/SPARC three level database architecture.

Within this framework the various external uses of information gain a certain degree of autonomy from the internal management of binary data and their physical materialization in the storage. As a result the end-user of a database can largely ignore the specifics of data management on the internal level. He or she interacts with the database through the information model. In doing so, information is not addressed by location but by its meaning as it is specified in the conceptual schema. This leads to the impression of immateriality accompanying digital information. In this respect Database management systems in general and the ANSI/SPARC database architecture in particular constitute the material basis for the apparent immateriality of the information stored in databases. However, this is not entirely unproblematic inasmuch as this materialized immateriality is accompanied by the illusion that pure and raw information is stored in databases that can be uniformly processed by generic software applications. By shielding users from the internal logic of data storage, many database applications also hide the information's having to be structured in order to become collectable and retrievable. And even if users are aware

of this, the role of information models is frequently misconstrued.

On the external level of user interfaces, the database manifests itself as an invisible and inscrutable bucket or container that not only bears a wide array of information but also drives the imagination of its users. This is reflected in the icon conventionally used to depict databases: a barrel or bucket (see figure 6).<sup>5</sup> It is indeed impossible to enter this bucket, that is, and take a look around in the database. In short, we cannot orient ourselves within the database, because users are structurally kept out. The only possibility to explore whether a database has certain information in store is to pose a query that yields an automatic answer. Herein lie the magic and the mystery of digital databases, because the two-step translation process between the external and the internal level takes shape as the direct interaction of users with an apparently inexhaustible resource.

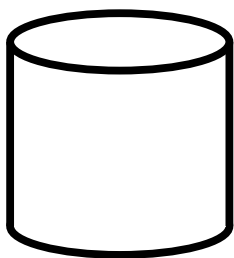


Figure 6: The barrel as iconic representation of databases

As a black box full of information, the database becomes the virtually infinite center of our signifying

practices that appears to be “semiotically transcendental” as Alan Liu (2008:217) pointed out in reference to Jacques Derrida. In his essay *Structure, Sign and Play in the Discourse of the Human Sciences* Derrida diagnosed a rupture in the thinking of the “structurality of structure” (Derrida 2001:352) that according to him lead to the “abandonment of all references to a *center*, to a *subject*, to a privileged *reference*, to an absolute origin” (ibid.:361). Yet, within digital database systems the invisible and inscrutable database storage serves as center from which virtually all information can be drawn. It serves as “*a center which arrests and grounds the play of substitutions*” (ibid.: 365), that is, the database delimits the otherwise infinite “play of signification” (ibid.:354) and thus becomes what Derrida called the “transcendental signified” (ibid.:354).

The illusion of the presumed fulfillment of the desire for a privileged reference, center or origin forms the basis of traditional database management systems and their contemporary successors. The Linked Open Data movement, for example, tries to transform the Web into a “single global database” (Heath/Bizer 2011:107) that can be queried and analyzed by “generic applications that operate over the complete data space” (ibid.:5). This promise is based upon the assumption that digital databases enable us to store and retrieve pure information that in turn is evoked by the independence, autonomy or immateriality inherent to digital information within the architectural framework of database systems. In Michel Foucault’s terminology of the *Archeology of Knowledge*, pure information could be described as statements without enunciative function, that is, statements whose identity does not rely on “a complex set

### *A New Digital Purity?*

of material institutions” (Foucault 1972:193). The belief in this new digital purity manifests itself in Tim Berners-Lee’s well-known call for “raw data now” (2009) which forms the ideological basis of the semantic web vision and the linked open data movement.

Contrarily, imaginary databases are never just collections of preexisting information. They are rather means of creating information by transforming them into a resource. Or to put it in terms of Heidegger’s (1977) philosophy of technology, a database transforms information into a standing-reserve that is ready-to-hand, whereby the information comes into existence as information by means of the conceptual information model which delimits what can be stored within the database. In regard to the information model, the database does not represent reality but constructs it by defining what is to be “counted-as-one” (Badiou 2005: *passim*) and is therefore to be treated as existent according to that model. Yet within the limits of this model the database might contain objective information about reality. In this regard databases oscillate between social constructivism and realism.

Taking this double *nature* of database information into account prevents us from naturalizing data and treating it as pure, autonomous, and immaterial. Database technologies are rather the material basis for the seeming purity, autonomy, and immateriality of digital data. As such they do not just determine what we know about the world, but what it means to know ‘the world,’ which will always already have been ‘our world.’

- 1 Drawing on Bowker's statement, Lisa Gitelman (2013) published an edited volume on the history and theory of the emerging data culture.
- 2 Originally the CODASYL Data Base Task Group was founded in 1965 as *List Processing Task Force* aimed at extending the programming language COBOL with capabilities for handling large datasets. The group, which was set up of users and developers from the computer industry, later renamed itself and focused on developing an architectural model for database systems as well as the network data model.
- 3 By distinguishing between how information is stored in the computer and how it appears to users the schema-sub-schema-architecture has certain parallels to the common twofold view on digital objects that manifest themselves as binary representation invisible to the human eye and as phenomenal presentation on user interfaces. (vgl. National Institute of Standards and Technology 1993:47)
- 4 The relational data model was proposed by Edgar F. Codd in his seminal paper *A Relational Model of Data for Large Shared Data Banks* (1970). During the 1980s the relational model became the de facto standard in database management.
- 5 Incidentally, the same pictogram is often used for depicting hard disks in technical contexts.

*A New Digital Purity?*

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# DATABASE INFRASTRUCTURE – FACTUAL REPERCUSSIONS OF A GHOST

FRANCIS HUNGER

*“US-society’s low-income fringe, which grew significantly during the crisis years, includes people who rely on state-run food support. These benefits still bear the name ‘food stamps,’ a term referring to the post-World War II period although a private company currently runs a digital system called Electronic Benefits Transfer, in short EBT, which deals with the financial transactions. [...] Last Saturday [Oct. 12, 2013] at around 9 am in some northern federal states the electronic EBT-cards began to malfunction. The ‘food chains’ shopping peak time had not yet begun. One-and-a-half hours later the EBT-payment system failed on the West coast and shortly afterwards in the East as well, all the way down to Florida, at a time when many clients were beginning their shopping [...] Within a few days the situation escalated. The computer problems appeared to be of serious nature, and the EBT-system stayed offline. Occasionally reports of organized supermarket plundering appeared on the Internet – it got dicey in gunmens’ country” (Kurz 2013:37, transl. F.H.).*

Journalist Constanze Kurz described it further in the *Frankfurter Allgemeine Zeitung* as an infrastructural breakdown, providing an impressive example of infrastructures’ becoming visible only during breakdown.

The aim of the following is to develop a notion of how the visibility of database systems – understood as basic infrastructure in post-Fordist societies – can be raised. Infrastructure studies, a relatively new field, provide the theoretical framework, enriched by methods developed

in the academic disciplines of media studies, media history, and media art. To begin, a discussion of infrastructure in general is necessary along with a view to how far database systems can be addressed as infrastructure. Going further, we look into the database infrastructure's various dimensions, such as time, space, membership, organizational structures, and practices. This leads to a practical approach in making database systems more visible through paying attention to recurring aspects of user interfaces, which can help in identifying the underlying database infrastructures. The intention embodied by this text is the development of a theoretical base for further practical, artistic explorations.

Geoffrey Bowker, Karen Baker, Florence Millerand and David Ribes introduce in their essay *Towards Information Infrastructure Studies: Ways of Knowing in a Networked Environment* (2010) a field of study which aims to observe and interpret everyday, in particular computerized, networked infrastructures which are called cyber-infrastructures (Bowker *et al.* 2010:97). Infrastructures are defined there as “vast sets of collective equipment necessary to human activities.”<sup>1</sup> This could be stone, concrete, pipes, or wires, but this notion includes protocols, standards and knowledge as well. The latter three actually enable the common use of the infrastructure by the diverse users and maintainers, that is, developers, administrators, managers and end-users.

From this definition and from our own experience we can deduce that infrastructure is characterized by its distribution in space and time. At the same time “Infrastructure typically exists in the background, it is invisible, and it is frequently taken for granted” (*ibid.*). And

this is exactly because of this ‘embeddedness,’ that their relative invisibility makes sense. This, however, can lead to invisibility of the economics and social dynamics of infrastructure and affects the maintainers, who experience low visibility and often enough receive low salaries.<sup>2</sup> Sociologists Susan L. Star and Karen Ruhleder further observe a series of pairs in infrastructure: “It is both engine of and barrier to change; both customizable and rigid; both inside and outside organizational practices. It is product and process” (Star/Ruhleder 1996:114).

Urbanism researchers Stephen Graham and Simon Marvin describe the spreading of infrastructures in their study *Splintering Urbanism – Networked Infrastructures* as follows: “Infrastructure networks dramatically, but highly unevenly, ‘warp’ and refashion spaces and times of all aspects of interaction – social, economic, cultural, physical, ecological. Infrastructure networks are thus involved in sustaining what we might call ‘sociotechnical geometries of power’ in very real – but often very complex – ways (see Massey, 1993). They tend to embody ‘congealed social interests’ (Bijker, 1993)” (Graham/Marvin 2001:17). Referring to Bijker, they further develop the notion of “congealed” or “frozen” when discussing infrastructure as capital: “As capital that is literally ‘sunk’ and embedded within and between the fabrics of cities, they represent long-term accumulations of finance, technology, know-how, organizational and geopolitical power” (ibid:12).

The metaphor of frozenness in conjunction with infrastructure is also used by Geoffrey Bowker and Susan Star. They speak of software as *frozen organizational discourse* and compare it to machines where the processual

and energetic parts of humans' work become frozen in technological form. "Modern information technologies [...] embed and inscribe work in ways that are important for policy-makers, but which are often difficult to see. Where they are used to make decisions or to represent decision-making processes, such technologies also act to embed those decisions. That is, the arguments, decisions, uncertainties and processual nature of decision-making are hidden away inside a piece of technology or in a complex representation. Thus values, opinions and rhetoric are frozen into codes, electronic thresholds and computer applications. Extending Marx, then, we can say that in many ways, software is frozen organizational discourse" (Bowker/Star 1994:187).

We have established already that infrastructure goes beyond concrete and pipes, but it even gets more complex because infrastructure also changes over time, as well as its users and usage. Infrastructure already bears the history of its emergence within: discussions among engineers; decisions about user interfaces from the simple valve to complex computer interfaces; legal conflicts; and power struggles are part of the standardization processes. When finished, a fixed standard creates stability for a certain period of time until economic, technological, or social changes give reason for changing the standards again. The process of standardization furthermore implies economical advantages for individual actors wherever they own the patents to the standards' key technologies.<sup>3</sup>

The dimension of time implies further that infrastructure is designed in a manner which allows its functioning for really long periods of time. Streets, railroad tracks,

and drainage systems have been developed to function over extended time spans. This is accomplished partially through the interchangeability of modular single parts; just recall the single elements of a railroad system. In particular long-term users expect its guaranteed functioning. They become accustomed to it, a process augmented by the infrastructural practices' often having been built on top of already existing infrastructures. Computer networks build on electrical networks, as a second step in reciprocal fashion, and so on. This correlates with the invisibility of infrastructure already discussed; as long as it works, it stays out of sight. Conversely, infrastructure gains visibility upon its breakdown, be it a break in a water main or as on June 21, 2012 the Twitter outage, caused by a "cascading bug in one of our infrastructure components" (Handelsblatt, 21 Jun. 2012).

Furthermore, organizational structures are established which allow for financial and juridical forward planning. We can look at the International Telecommunication Union/Radiocommunications Sector as an example:<sup>4</sup> It coordinates the sharing of the limited space in geostationary orbits among the diverse governmental and non-governmental actors.

In terms of databases, the Conference on Data System Languages (CODASYL), convened by the US Defense Department, was of infrastructural importance. It not only established the programming language COBOL but also created the basics for a standardization of database technologies. A sub-group, the Data Base Task Group, delivered in 1968 its first report called *COBOL extensions to handle Data Bases*. In subsequent reports it became known as the CODASYL network model. The

breakthrough, however, was reached using the relational model developed by Edgar F. Codd at IBM in 1970. It differed significantly from the CODASYL proposal, and only in the 1980's did it become a quasi-standard of today's database technology.<sup>5</sup>

CODASYL is also a relevant example of a government-funded organization. Infrastructure studies are not solely concerned with the histories of infrastructural product and service development, but with the history of those organizations who create the context as well. It is they who define, categorize, organize, discuss and create standards. It can be assumed that it would be easy to fill a theater stage with the ongoing drama of power struggle, lobbying, friendship and competition surrounding this process. "We can not [record] the history of software without [recording] the history of their surrounding organizations," writes the technology historian Geoffrey Bowker (Bowker 2010:102).

CODASYL members in 1969

James P. Fry	The MITRE Corporation
Mary K. Hawes	Information Systems Leasing Corp.
William C. McGee	IBM International Business Machines
Tax A. Metaxides	Bell Telephone Laboratories
T. William Olle	RCA Radio Corporation of America
Jonas Rabin	Western Electric
Martin J. Rich	ESSO Mathematics and Systems, Inc.

*Francis Hunger*

Richard F. Schubert	Goodrich Chemical Company
Edgar H. Sibley	University of Michigan
Aria E. Weinert	Naval Command System Support Activity
Alfred H. Vorhaus	SDC System Development Corporation
John W. Young	The National Cash Register Company

Figure 1: Members of the CODASYL in 1969  
(CODASYL 1969a).

Membership is another facet of infrastructural organizations. “Strangers and outsiders encounter infrastructure as a target object to be learned about. New participants acquire a naturalized familiarity with its objects as they become members” (Star/Ruhleder 1996:116). To be naturalized in this context implies that to the members a certain infrastructure appears to function naturally: “It always has been working like this,”<sup>6</sup> the qualified user may say, while *newbies* still struggle with details and unanswered questions. So over time one who would identify a functioning infrastructure becomes a member; if unsuccessful at this, potential members get pushed away.

Whether or not a structure becomes infrastructure depends on developers *and* users. In their study *Steps toward an Ecology of Infrastructure: Design and Access for Large Information Spaces*, Susan L. Star and Karen Ruhleder looked at a community of biologists who already were users of a scientific community system or were about to enter the system. The *Worm Community System* enabled networked

interactions among US-scientists and their work on genetic sequencing. While the software package, globally seen, was well developed and documented, the individual users at local levels put up resistance when actually trying to implement the software. Local IT departments, for instance, were not willing to run the UNIX-based system, since they were used to Windows servers. Tension also originated with software developers who opted globally for UNIX and the users who preferred Apple Macintosh computers over UNIX. "On one level it is a discussion about operating systems, on another it is representative of two world views and sets of values with respect to the relationship between technology and work, and the relationship between the tool and user" (Star/Ruhleder 1996:130). Star and Ruhleder describe the tension between a flexible, familiar usage adapted to local needs and the global necessity for standards and continuity. Such tension grows with the global distribution of an infrastructure. They observe: "An infrastructure occurs when the tension between local and global is solved" (Star/Ruhleder 1996:117).

Another impressive example of the tension between *local* and *global* needs is the Library at the University in Leipzig. Over the last 15 years its systems have changed from manual book handling to computerized handling involving a complex set of database software systems. It is comprised not only of the library's catalogs but also media that are within reach of the library through inter-library loans or, more generally, through electronic licenses from large distributors or aggregators, such as Ebsco, ExLibris or ProQuest, some of which are ordered almost in real time according to users' demands.



It includes data, i.e., titles or availability, kept locally at the library, which consists of several branches spread over the city. It incorporates data that is collected and consolidated with associated libraries through the Südwestdeutscher Bibliotheksverbund (South-West German Library Network). It is composed of data from the German National Library and other national libraries. Recently they moved their search infrastructure, funded by the European Union and the German federal state of Saxony, from a relational database approach, the OPAC, to that of a search-engine-like setting, employing and co-developing open source solutions like Solr and VuFind. Another emerging approach is the use and provision of Open Data access through APIs, where the library not only receives data from other services but also publicly provides its own data, i.e., title meta-data. This listing may only roughly illustrate the tension that appears between local needs and global interaction of these interdependent systems, but it is obvious that in this library, where two decades ago only insular local electronic databases were installed, but where today a technological landscape distributes data locally and globally. Huge changes have indeed taken place (Hunger 2014).

It can make a difference whether the infrastructure owners are state- or privately run, and the form of ownership often differs among the various organizational structures which may be involved in the particular infrastructure. In this way it can happen in meta-structures or meta-organizations, that state actors often interact with private actors using differing scopes of resources. Thus, the decision as to whether infrastructure should

be a state or communal task is subject to change over time. Over the last two decades a phenomenon could be observed wherein after initial privatization of a communal infrastructure, i.e., hospitals, water supply companies, or tram lines, on becoming aware of a series of unexpected consequences, the privatization was reversed and the infrastructure brought back into public ownership by the municipality.<sup>7</sup>

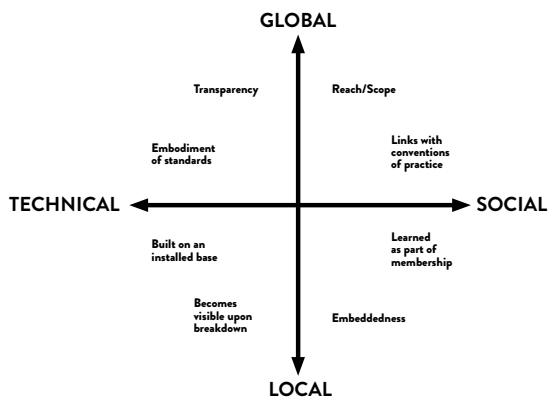


Figure 2: Clockwise: Information infrastructure as distributions along technical/social and global/local axes (Bowker *et al.* 2010:101, referring to Star/Ruhleder 1996).

Today's Internet emerged from a mixture of university and military structures. After state-subsidized organizations financed using tax monies powered a concentrated initial funding, private actors were able to take over the basic technology and create a market by fostering the technological innovation towards mass consumer products (see National Research Council 1999). In addition

to the Internet, the Global Positioning System, communication satellite systems in general or the personal computer in particular show this pattern of a first governmental then private ownership succession. As already alluded to, with that we can observe mixed private-public infrastructure organization structures, such as in the Global Positioning System. This system of 24 satellites is managed and maintained by the US military. It includes ground infrastructure, transceiver and receiver stations, a control room which, for instance, adjusts satellites' orbits, and resources for rocket launches since the satellites have to be replaced every 15 to 20 years. This is achieved partly through NASA and partly through private businesses such as the Ariane Corporation. The satellites' construction is in the hands of the private defense industry. The end user is served by private providers of navigation systems and geodata services. Geodata in turn is produced and provided in part by private actors and partially by public organizations, such as the land registry offices. Public and private databases play at many points of these infrastructures an integral role in data handling and processing (Hunger 2012).<sup>8</sup>

The establishing of state-run infrastructures ultimately depends on tax income and the ability to incur debts for large scale projects. In that sense it is politicians who have the task of establishing justification contexts for public infrastructure investment. Once the state-run establishment of an infrastructure succeeds, it can be observed that it remains under public ownership for at least a 30-year period. Private companies often offer services and products which extend and diversify this infrastructure towards a mass market; they finance their actions through the stock market and have to be able

to present a direct gain, in the sense of the intention to make a profit, to their investors and creditors.<sup>9</sup> Both forms of ownership appear to supplement and depend on each other.

Today databases sit at the heart of nearly every software application. While hardware was advancing the development of electronic computers during the early phase (1940s–1970s), today software plays an important part in innovation. The universal computer in the hardware sense was strongly pushed by John von Neumann and his cohorts from 1945 on and since has become the predominant model for electronic computers. This model describes a computer consisting of the processing unit, control unit, memory (for software and for data) and input and output units. Goal of this configuration was to make software independent of data (Ceruzzi 1998:21f). With regard to databases we can observe a similar movement: The current paradigm, the relational database, developed and promoted by Edgar F. Codd aimed to make the data independent of the underlying hardware structure (Codd 1970). My preliminary assumption is that Codd's relational model is the complementary part to von Neumann's idea of universality.<sup>10</sup>

Concluding (with Star/Ruhleder 1996:116) infrastructure appears in multiple dimensions:

- embeddedness,
- transparency/invisibility,
- reach or scope beyond a single event or place,
- learning through membership,
- conventions derived from practice,
- embodiment of standards,

- basis in existing infrastructure, and
  - visibility on breakdown,
- to which I'd like to add the dimensions
- public/private ownership and
  - universality of concept.

Databases only emerge as infrastructure through their being embedded in already existing infrastructures such as computer networks or software environments. Databases as infrastructure are subject to a complex set of relationships, which usually stay invisible.

### Ghost Hunters: Strategies in creating visibility

It has already become obvious how deeply the vocabulary that we use is shaped by infrastructures' invisibility: infrastructure "exists in the background," is "literally sunk," or "transparent." Now we can simply assume that the issue of in-/visibility addresses a political dimension as well. Database infrastructure resembles an invisible ghost or a ghost in a shell,<sup>11</sup> hidden in a cover of chips and circuit boards.

The visualization of infrastructure during its breakdown is pop-culturally known via many films and TV-series: New York gets flooded and frozen in *The day after tomorrow* (2004), a large part of infrastructure is destroyed, where the New York Public Library remains alone as a survivors' hideaway. In *Falling Skies* (2011) aliens nearly destroy humankind, who leave the central urban areas and rebuild a new infrastructure advancing from the periphery. The science-fiction series *Revolution* (2012)

depicts an archaic world following the global breakdown of electric power networks.

The breakdown of infrastructure, the fears connected with it, and the general dependence on infrastructures is represented in these phantasies in the form of an imaginary, subconscious fear, a phantasm in the Lacanian sense. Similar phantasies play a role in the hacker movie genre, where a dysfunctional computer system completely paralyzes the function of a broad infrastructure, as for instance in *Wargames* (1983) and *Sneakers* (1992). The computer game *Watchdog* (2014) may be the most obvious example: the game's hero, Aiden Pearce, uses a mobile phone with an extra function that allows him to interact with infrastructure via a centralized computer system, so he can switch traffic lights on and off, manipulate surveillance cameras in public spaces, or close gates and bars at will.

These pop-cultural works celebrate catastrophic scenarios and manage to address subconscious fears of the collapse of civilization. They point up our dependence on infrastructure for the most part implicitly, that is, without mentioning explicitly the term 'infrastructure.' Appropriately the name of the genre is 'disaster film,' not 'infrastructure film.' However, if we aim to make infrastructure visible, it is Bowker *et al.* who proposes investigating infrastructural breakdowns as just such a means. Another method is the use of infographics, whose aim is to reduce complex problems to clearly structured graphics – but in the case of infrastructure this often means that designers tend to address the comprehensible aspects of infrastructure, that is, 'bricks and mortar' or users. They tend to deal with temporal or juridical aspects insufficiently.

Shannon Mattern, a professor of media studies, proposes best practices beyond mapping and visualization through photography and video: “We should consider if there are perhaps other modes of ‘accounting for’ infrastructural units, their couplings and chasms, and the ‘relations that take shape through and around them’ that don’t necessarily translate infrastructures into visual – graphic – form. Could we possibly *play* an infrastructure? *Listen* to it? And of course *visit* it?” (Mattern 2012). In her essay *Infrastructural Tourism* (2012) Mattern discusses several media art projects<sup>12</sup> which employed performative strategies and enabled infrastructure users to develop a kind of basic “infrastructural literacy.” Yet she critically comments on these projects: “There seems to be an implicit idea in many situationist-style interventions that participants learn to look at their environment in new ways. But ways this ‘knowledge’ becomes expressed after the tour, derive, or whatever, remain vague. ... The ‘after’ seems largely unexplored” (ibid.). She argues that it would require further steps to tie the participants’ experiences sustainably and proposes, for example, the creation of a topical research library that supports a deeper insight into structures and political decisions. Mattern identifies further potential in an actual application of knowledge generated in the field of infrastructure studies through “introducing more critically aware design practices, or reversing protocols and regulations” (ibid.).

Another method of visualization was described as “infrastructural inversion” by Geoffrey Bowker in 1994.<sup>13</sup> Lisa Parks, professor of film and media studies, employed this method for her studies of satellite

infrastructure. Satellites in orbit remain invisible to unaided sight, a problem similar to the invisibility of databases. During the workshop *Satellites/Borders/Footprints* with Lisa Parks, which I organized at the Hartware MedienKunstVerein Dortmund in 2010, I learned this method of visualization of ‘invisible’ infrastructure. While it is difficult to observe ‘distant’ parts of infrastructure such as command centers and their workers, the rocket industry, ground stations, or regulatory bodies, there is still an obvious part visible to the naked eye, the satellite dish. Yet Parks mentions that any approach to infrastructure, in this case the satellite footprint – the strip on earth where a certain satellite is receivable – has to stay necessarily fragmentary. “Rather than assume the footprint could be described in its totality, footprint analysis deals only with portions of it in order to provide a sense of the complexity and impossibility of an entire picture. In other words, rather than setting out to describe and document all parts of the system that make a footprint possible, the analysis focuses upon a selection of localized sites or issues as suggestive parts of a broader system that is imperceptible in its entirety” (Parks 2009).

I think the method of infrastructural inversion, which Lisa Parks practically developed within the context of anthropological field research in referring to Bowker (1994) and Fiske (1996), can be fruitfully employed for databases as well. We can paraphrase Parks’ considerations directly with just the change of one word: Rather than assume that ‘database infrastructure’ could be described in its totality, ‘database analysis’ concerns itself solely with portions of it in order to provide a sense of the complexity and impossibility of an entire picture.



Summarizing, the following methods for fostering database-visibility can be employed:

- visibility during breakdown in fictional, documentary or journalistic approaches;
- visualization/Mapping;
- performative, artistic strategies; and
- infrastructural inversion/field studies.

When trying to apply the infrastructural inversion method to database infrastructure, we would first identify those parts of database systems with lower visibility:

- geographically dispersed data centers, which house database servers and databases software;
- organizational structures and those individuals who programme and distribute database software; and
- the structures and raw data of databases, which tend to be hidden from public perception through the limitation of access rights and through layers of software ‘protecting’ the database.

In a second step we can turn to aspects of database infrastructure with *higher* visibility. Visually they appear through the different modi: 1.) data input 2.) query modus 3.) result display. While the data input- and query-modi often use form fields where users can enter data, the result display uses list views of different complexity to present data.<sup>14</sup>

To deduce finally the existence of databases from the perspective of visual output, we could look out for the following functions and visual signs:

- form view for data input, search queries and updating data;

## *Database Infrastructure*

- list view or presence of structured data;
- use of abstract organizing principles, i.e., ID-numbers;
- login, which allows for gradual access levels and individualization;
- changing logs that record changes in data, i.e., in Wikipedia, where it records different article versions and the editors' user names; and
- external data access through a standardized interface, the API.<sup>15</sup>

These visuals in the form of user interfaces provide higher visibility, and they also allow for a partial reverse-engineering of the infrastructure that is hidden in the background, based on the idea that the user need not concern him- or herself with infrastructures' details.

The discussion as presented is mostly theoretical at this point. However, it is my hope that it may be inspirational for some, and I look forward to developing it further and adapting it in practice.

## Notes

1 “Collective” here addresses the form of usage, not of ownership.

2 Only a few highly qualified workers are better paid. In this context the meaning of “highly qualified” is limited to the qualifications as demanded by the labor market. It is up to further research to look into the relation between maintenance work and female

reproductive work, both of which share the aspects of low payment and low visibility. These might be positioned against a higher public visibility of the new creation as such, that is, the process of establishing infrastructure, which process can be associated with the pairing of the male subject and the public sphere.

3 For databases these struggles can be observed exemplary during the discussions over the hierarchic model, the networked model and the relational model, within and around the CODASYL committee.

4 The Radiocommunication Sector/ITU is a United Nations committee and responsible for the assignment of international radio frequencies. Cf. <http://www.itu.int/en/ITU-R>.

5 Cf. primary sources: CODASYL 1969a, CODASYL 1969b, Codd 1970; secondary sources: Fry/Sibley 1976, McGee 1981, Haigh 2004.

6 Note: A 'naturalized' member draws its meaning from the process of being naturalized, i.e., becoming a US citizen through immigration.

7 In these cases it is possible to observe the ramifications of neoliberal ideas in relation to infrastructure. Although it is beyond the scope of this article to discuss it in closer detail, the whole discussion of public versus private ownership of life-supporting infrastructure can show that infrastructure is subjected directly to political processes.

8 See further the research by Lisa Parks (2009, 2010). In future I hope to be able to show a similar model in regard to databases.

9 This pattern seems to have changed recently with the emergence of companies like Google, but it would need further investigation to clarify this. At least for the product Google Earth it can be shown that the precursor company Keyhole Inc., which was founded in 2001 and acquired by Google in 2004, got part of their funding from state resources: The CIA's venture capital arm In-Q-Tel channeled taxpayers' money from the National Geospatial-Intelligence Agency into Keyhole Inc. ([http://en.wikipedia.org/wiki/Keyhole,\\_Inc](http://en.wikipedia.org/wiki/Keyhole,_Inc)).

10 I remain intentionally vague since further research is needed. This argument also necessarily ignores more recent technological developments in non-relational databases.

11 *Ghost in a Shell* is a manga by Masamune Shirow, where the ghost is represented by the human mind directly and the shell is the cyborg-body surrounding the ghost.

12 E.g. the performances *Electrical Walks* by Christina Kubisch.

13 Bowker 1994, here cited after Parks 2009.

14 As Lisa Parks with the satellite dish, I'm concentrating on the visual appearance of database infrastructure and omit the many occasions where databases are

involved but do not become immediately visible to the end user, e.g., in logistics, production of goods, services etc.

15 Cf. Bucher 2013.

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# EXHIBITION

“Suchroutinen: Erzählungen von Datenbanken”,  
D21 Kunstraum Leipzig  
October 04, 2014–November 2, 2014

Curators: Lena Brüggemann, Hannah Sieben  
Curatorial Assistance: Christiane Fiebig  
Managing Director: Constanze Müller  
Team: Nora Bodnar, Michael Heidt, Michael  
Moser, Susanne Reinhardt, Juliane Richter, Annika  
Schallenberg, Johanna Weißler, Paul Ziolkowski

## Credits Workshop

D21 Kunstraum Leipzig

October 23 2014 – October 25 2014

Researchers/Teachers: Heath Bunting, WaiWai

Participants: Andreas Broeckmann, Christiane  
Fiebig, Golden G, Matt Guy, Michael Heidt, Adrian  
Knuppertz, Kloschi, Malte Krusche, Michaela  
Lakova, Víctor Mazón Gardoqui, Cesca Golodnaya,  
Nepomuk, Konrad Neuffer, Ollie Palmer, Daniel  
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## Credits Symposium

Sublab Leipzig, October 26 2014

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Wolfgang Coy

Open Forum Inputs by: Bündnis Privatsphäre Leipzig,  
Herr Flupke, Rayk Westphal  
Moderator: Hannah Sieben  
Organization: Lena Brüggemann, Francis Hunger,  
Kloschi

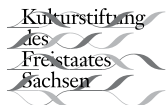
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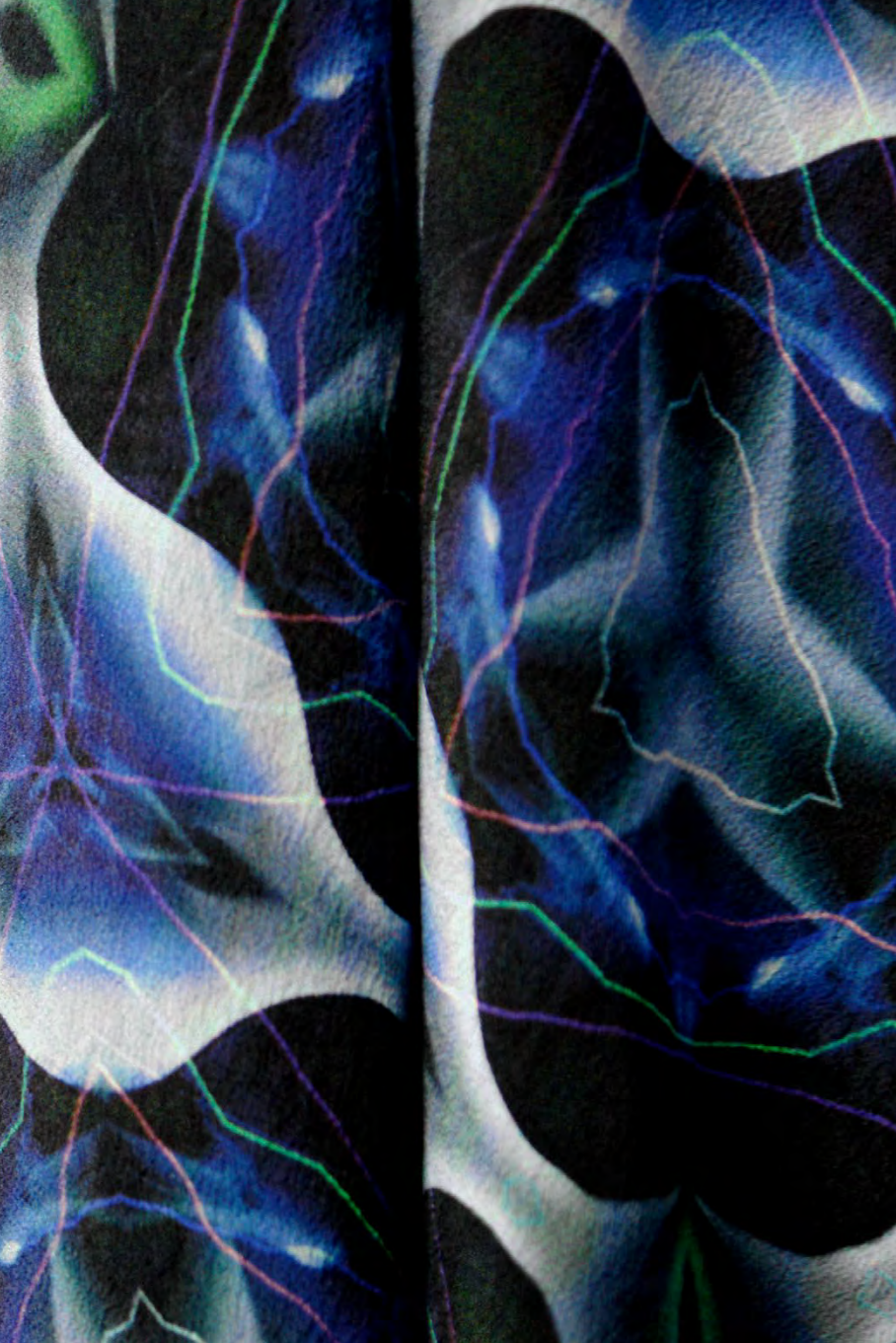
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Databases pervade our everyday life, they are involved in the individuals most fundamental activities. Through their near invisibility and resistance to narration they produce subtle forms of collective control and normalization, accompanied by keywords such as: mass surveillance, big data, user generated content.

“Search Routines: Tales of Databases” consists of three parts: The artistic positions within the exhibition address the invisibility of databases with strategies like narration or translation of data and algorithms. Workshop teachers and participants researched the potential of making the invisible visible or simply of hiding oneself from the databases range of view. The symposium discussed databases from a sociological and cultural science perspective.