

To date, we have already successfully applied our techniques to films, animations, video games, comics, magazines, books, and other print publications, artworks, photos, and other media content. Examples include all pages of Science and Popular Science magazines published in 1872-1922, hundreds of hours of videogame recordings, all paintings by van Gogh, and one million manga pages. Since 2013, the lab focused its research on visual social media. In Phototrails, we visualized patterns in 2.3 million Instagram photos from 13 global cities. In Selfiecity (2014), we analyzed the differences between 3200 selfies shared in five cities. In our most recent project *The Exceptional and the Everyday: 144 Hours in Kiev* we look at all Instagram photos shared in the central part of Kiev during 2014 Ukrainian Revolution.

Links:

<http://phototrails.net/>

<http://selfiecity.net/>

<http://www.the-everyday.net/softwarestudies.com>

ROUNDTABLE

From Algorithmic Signs to Cultural Analytics¹

INGE HINTERWALDNER: What came to mind on hearing the presentations today is the question of how interesting it would be to differentiate between academic and artistic, maybe also industrial visualizations of data. For example, we had a presentation by Ruth Reiche and Daniel Kurzawe who said that, on the one hand, we try the artistic approach and, on the other hand, the academic one, let's say. So what would be the parameters by which to differentiate this? Also, Thomas Bjørnsten presented us with some artistic pieces, pointing in the direction of how artists gather different kinds of data, in turn leading to another kind of epistemology. So, are there necessarily any ideas or feelings making a pointed difference between data-based art, on the one hand, and applied information visualization, on the other, and how is this difference used in the academic field? Is there maybe a difference in which step of a process or research project this visualization is represented or used? Just to begin with.

MARTIN WARKE: When I think of those sixty or seventy or eighty years between the first attempts at information aesthetics and what's being done now, the question occurs to me of what has stayed the same and what is radically different? I have the impression that in information aesthetics and what we have now, whether that be called cultural analytics or whatever term the advertising or marketing industry uses – data science maybe –, human perception is replaced by something else. In the case of information aesthetics, it seems to me that mathematical methods were employed because there were only very few data, almost no data at all in fact. It was quite synthetic in a way. And now the situation is different in that human perception is still replaced by something else, but by huge amounts of data, which are also social data. The data of data use, as Google's success story tells us. It's the data about how humans and computers themselves use data in a very dense, interwoven fashion. And this is also, I think, the main difference between the Turing paradigm of that autistic calculator that produces the results of mathematical functions out of nothing, out of a table. So, there is a replacement in both of these attempts, but one involving only very very sparse data and one now involving huge amounts of data which can only be processed algorithmically. And I have the impression that we are no nearer to simulating human perception. It is a replacement in the first and in the second case. I wonder, do we know any more about similarity, a point which came

¹ Auszugsweise Transkription der Abschlussdiskussion des Workshops »Cultural Analytics« (Leuphana Universität Lüneburg, 4.-5. Juli 2014) mit Inge Hinterwaldner (MECS, Leuphana University Lüneburg), Lev Manovich (City University of New York), Martin Warke (MECS, Leuphana University Lüneburg), Frieder Nake (University of Bremen and University of the Arts, Bremen).

up several times? Or, to me as somebody who has perception, it does not allude to what I do when I find things similar. So, once again, very different situations: almost no data at all, principles rules mathematics – as in the sixties – against an overabundance of data, including social data. But in both cases we have – (Or do we? That would be the question. What is your impression?) – the replacement of something by something totally different, human perception by some algorithmic construct that just works and is not similar to perception. That would be my question to you and to everybody else.

LEV MANOVICH: I can also make a remark about the differences and the similarities between the 1960s and now. Thinking about culture as information was quite popular in the second part of the 20th century because of the influence of the information theory of communication, which says that every communication act involves a sender, a message and a receiver. For example, if you read the first article of Roland Barthes about the photographic message there's no semiotics anywhere, it's pure Claude Shannon. It says that photographic communication involves the sender (the advertising agency), the message (the photo), and the receiver (the audience). So semiotics for Barthes in this article was actually information theory. Why is this important? In the 20th century in the humanities we used to focus on the sender. We analyse the author, we talk about an author's biography, we do a psychoanalysis, or, if you're a kind of Marxist, you do some kind of social reading, and so on. After that, in the 1960s we had semiotics (which was actually never any semiotics, it was a mixture of structuralism and information theory, but anyway, let's call it semiotics). And a bit earlier, in the Anglo-Saxon context we had 'new criticism', and both semiotics and new criticism said that we should focus on the text. So we forgot about the author, the author is not interesting, the author is dead, as you know (see the famous Roland Barthes article on the death of the author). Then in the 70s people turned around and started to think about the reception – i.e., the receiver, to use the terms of information theory. But at that time, it was really hard to collect the data about the actual reception (reading or viewing experiences) of many people, so this idea did not go very far. And this is the big difference between the humanities and also computational approaches for the study of culture in the 1960s (like info-aesthetics) and what is possible today – the renaissance of the investigation of reception happening now (in computer science and also in the industry). Today, if you're now interested in, for example, which photographic images people like, you can go online and download millions of images. Every image comes with a number of likes, user comments, and other user data. You can then automatically extract thousands of visual features from images and build a mathematical model, which would try to explain why people prefer some images as opposed to others. There are a few computer science papers on this, and the models work pretty well. So you can now do quantitative empirical study of the reception by using all the social media data online. To me, that is the big difference. Yes, you can also study the artistic text itself, making some diagram to show the patterns in

a film or the patterns in a novel. However, in the beginning of the 20th century the Russian poet Andrei Bely, the Russian mathematician Andrei Markov and some others were doing something like this – using statistics to study poetry. But what we couldn't do a hundred years ago is to study the reception of culture by millions of people. And if you add other techniques that are now available, like eye movement recordings, EEG, fMRI, which are now already used very widely – I mean, not across millions of people, but more and more – it's a very huge shift in what humanities can do. Of course, for such work to happen the people in humanities would actually need to start doing something practical instead of only discussing things endlessly. Humanities today have a chance to develop new exciting ideas and use computational techniques to study reception on a massive scale – something which was not really possible in the 1960s. That's my remark about the difference between the 1960s and today.

HINTERWALDNER: May I just pick up on two elements of the statements you made, namely on the replacement and the study of reception. In 2011, I had the chance to be part of a Summer School in Chicago, where people from Visual Studies and the so-called German Bildwissenschaften discussed things together. And then suddenly I felt myself to be in a situation as a phenomenologist, that I would have to make an effort to enter the realm of academic research because I would describe only subjectively what I felt in front of the images instead of being able to generate something of at least some intersubjectivity. And so the proposals were that I should imagine at least one or two different recipients besides myself, or that I should start studying the reception situation, the public. So the idea was then to shift the objective research away from the image to the reception. And now I was a little bit afraid that, when it comes to Big Data, as a phenomenologist I would again have to shift the focus of my research away from the close reading of a single image to the close reading of the meta-visualization of bigger masses of data. Then I realized, with Cultural Analytics, you also propose a multi-scale reading that allows me to do all different kinds of close readings on different scales. And my question now, or the idea that came to mind with the multi-scale reading – and now I would like to pick up on one basic idea you (Frieder) had and that you both published very early on, namely the idea of having an Oberfläche and Unterfläche, a surface and a subface – is: Wouldn't we also have to analyse those multi-scale readings in the realm of the subface?

MANOVICH: So what is subface?

FRIEDER NAKE: Let me take the opportunity to explain what 'surface and subface' stands for. It is an expression in everyday language for a theoretical construct. I call the theoretical construct we are talking about an algorithmic sign. I claim it is an extension of Peirce's concept of sign. Simplified a bit, the algorithmic sign is a sign that has two interpretants. One interpretant is generated by a human, the other by

software. The two agents are interpreting in parallel, they cannot do otherwise. The pair surface-and-surface is just another expression for the same. The two express a fact in the digital world that, I believe, must be said of everything there. Take anything that becomes the subject matter of computing: your salary at City University of New York, somebody's biography, a computer image. Whatever it may be, when it is put onto a computer, it exists in two forms. It gains a two-fold ontology. First, it is visible (or otherwise perceivable) by us, the human; and second, it is (and must be) computable by the machine.

To this extent, the thing under semiotic consideration is being interpreted by two interpreters all the time and in parallel. The two don't know much about the other, in fact, they do what they do independently. The computer (the software) is computing, and the human is sensually perceiving. Both acts are acts of interpretation. These are more or less trivial observations, and many have written about them, only in a different language. But everything that is true and made explicit is trivial. It's good because we understand it. The discourse of the algorithmic sign is my theoretical way of dealing with this so that people don't understand it so easily (*smiles*).

I want to add a remark concerning the situation between the 1960s and current times. You will not see me complaining, »Oh, how nice it was then, and how terrible it is now.« I am glad to have lived through that time and in that place because there and then we were encouraged never to even touch Heidegger! Isn't that fantastic?

AUDIENCE: What place was that?

NAKE: Stuttgart. Heidegger would have been purely poetics, you should not admit that you had looked at Heidegger. That's what I believed.

WARNKE: He was too near!

NAKE (*laughs*): Over there in the Black Forest! Now, why was I excited about this? I had, of course, not read Heidegger. The fact that I was not supposed to read him made him more interesting, of course. For whatever is forbidden is interesting. But Max Bense certainly meant it differently. He said that philosophy, to a large extent, is pure production of text and, to this extent, poetry. When you read a text as a poem you feel free to interpret it in whichever direction suits you.

Cut! Computer programs are texts like poems. When I teach the first beginnings of computing, I tell students: Look, here is a poem. Who is going to read it? You read it? OK, read it. Did you understand it? I head into programming by reading poems. Of course, poems are not totally regulated. But there are often quite strong rules that the poet imposes on his or her own writing. The difference to a computer program is that, in its case, the rules must be obeyed. No violation is allowed. A novel is chaotic by comparison! I know, it has different types of rules. A drama is only a text until a director takes it up and turns it into an event.

So, artistic work may be heavily, or not quite so heavily, regulated. Computer programs are similar. When I say they are totally regulated, you say that's wrong because you invent your own programming language. In your own programming language you write according to the rules you have established yourself.

In the long gone times of the 1960s and 1970s, everybody was inventing their own programming language. Now everybody is poking at the GUI, the graphical (and other) user interface. We are, when it comes to computing, talking about a tremendous divide between the 1960s and now. The difference is marked by the computer becoming a commodity. The decisive year is 1984: the appearance of the Macintosh. That complex machine called computer, in order to become a commodity, had to become easy to use. It took about 15 years of research at Xerox PARC, from 1971 to 1984, to develop all this. The computer had to be protected against its users, against all of us. This process had a tremendous influence on everything we have been discussing here.

WARNKE: May I take up your metaphor of computer programs as poems? I think we have the situation now that we actually have these poems in very small situations, when somebody codes something, but the situation on a large scale is more of a mass riot. It's no longer the reading of a poem, it's even much more chaotic than a novel, much more chaotic than a play, a drama. We now really do have a mass riot because so many people and so many computers are involved, so much computing power is involved, and economic interest is involved in all of that. If we try to describe the whole situation spanning most of the surface of the earth – the rich countries, not Africa – we can say that we have a sort of mass movement, which is chaotic, which is no longer comparable with that romantic attic room situation of writing or reading a poem. And yet, every snippet of code is still such a poem. But the whole picture is now, following 60, 70, 80 years of development, very very chaotic, a dramatic riot.

MANOVICH: Why do you say it's chaotic?

WARNKE: Because nobody can foresee what will happen! It may be deterministic in its elements, but there are many things that emerge which nobody ever predicted. So this seems to me to be the difference between the 60s and now. And now for me the question is: What do we learn from this about human perception and about art?

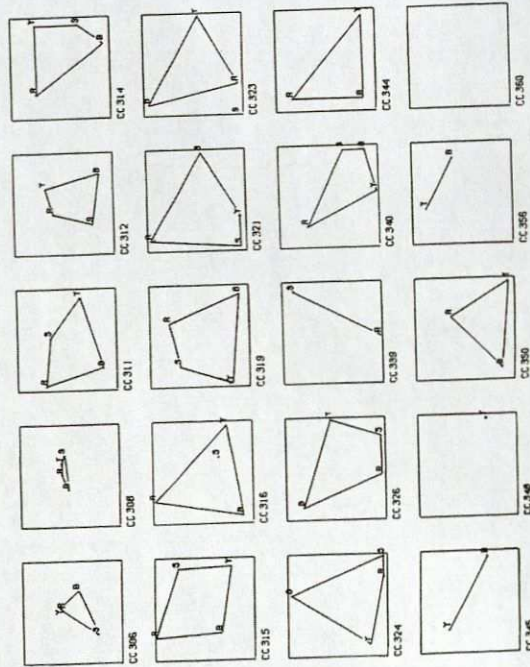
NAKE: We learn that our perception is not a constant! We now perceive totally differently because of computers. But, also, trains are running faster, and there is cheap air travel. Our perception has changed enormously because the productive basis of society is changing. I guess in most cases where such dramatic changes happen, we don't notice it.

The student tells me »Oh, wait a minute, I must clean my hard disk.« I look baffled. He thinks of his brain in terms of technology. I occasionally meet young

people who talk of themselves in terms of computing. That indicates a change in consciousness and perception. I give them to read: de la Mettrie, *L'homme machine* (*Man as a machine*). The idea that humans can be looked at as machines is old! Many teachers want to turn us into machines: they want us to react predictably!

MANOVICH: He [the student] has a better algorithm (*laughs*).

NAKE: Let me return to one of our topics, information aesthetics. Let me show you something else. I will show you some sketches from analytical work in 1971. You see on this perforated paper, drawn by a plotter, little squares and some polygons inside the squares.



Frieder Nake: Project Mondrian 1971, excerpt. – Each square stands for one of Piet Mondrian's neoplastic paintings. The vertices of the quadrilaterals are the centers of gravity for the colors Yellow, Blue, Red, and Black (S). The project created a database, one component of it were these figures.

If you look even closer, you can see a code under each of these windows. The code is the number of a painting by Piet Mondrian in Michel Seuphor's fabulous book on Mondrian. The points connected by straight lines are the centers of gravity of the colors red, yellow, and blue (at times also black).

Why did I do this? I did it with the help of others as an attempt to represent the paintings of a certain class (Mondrian's neoplastic phase) by some kind of data (gravity polygons). Whether or not the data were well chosen, expressing something important in Mondrian's work, was not the issue. I replaced the paintings to

be perceived by data agglomerations to be computed. It was only an attempt to do something, rather helplessly, that the Digital Humanities and Big Data researchers are now doing on an incredibly magnified scale.

Let me take a second case. What you see here is a naïve replacement of the paintings of the neoplastic phase of Mondrian by line-drawings. All colour is gone, only representations of the black-bar structures are left. Rather cruel, you might say, to do something like this to the Mondrian paintings. You are right. And wrong, at the same time. For whenever and however we start investigating some phenomenon in the world, we start by replacing the phenomenon by something else. What I did in 1971 is only particularly blatant. Don't kid yourself into believing the principle has changed.

Observe an innocent detail. All lines inside the format of the painting extend right to the frame. This is not always the case in Mondrian. Often, his black bars do not touch the border. They might leave a short space open. Here I forged the painting. It did not fit nicely into how the program was working. Therefore, the bars had to touch the border. We created a small Mondrian database. Small data, not big data. Modest data. In order to do what?

The polygons I showed you were a geometric measure. We allowed for more data to stand in for Mondrian's paintings. I did this with the intent of creating a timeline. I did it, dear Lev, in order to come up with a predictive model. From the timeline analysis I wanted to predict what he would have painted later. A daring young man risking his scant reputation, isn't this what the Mondrian project was about?

Of course I was in for a tremendous problem! Mondrian emigrated to New York. There he did something similar, but vastly different! Still bars, still coloured rectangles. But – colours entered the bars! They were no longer black, but little Mondrians themselves. So, how would the extrapolation of the timeline cope with this?

Let me end by telling you another aspect of the project that I'm a bit proud of. The constructivist London artist, Anthony Hill, and I collaborated on the M-graphs (M for Mondrian). We analysed in terms of mathematical graph theory the structure of the black skeletons. So we replaced the geometry of Mondrian's paintings by their topology. Topology instead of geometry – I still think this was a promising step. Was it big data? I hesitate to reply positively. Cultural analytics may need more daring steps than big data allow for. We then, in 1971, were not good enough to reach our self-defined goals. Or we did not have the necessary support. And so I dream on.

MANOVICH: Can you please promise to find this analysis [from 1971] and publish it? Because it's just another example why the sixties were just much more fun than now, right? You know, I was trying to, in my talk, say that one day I'm going to start doing predictive cultural analytics, but you already did this thing! So please publish your analysis!

NAKE: This was published in a book in 1974 and I probably there announced I

wanted to do more on Mondrian.² But the revolution came to Germany. Therefore, I stopped project Mondrian. It was a project of great potential, I believe. With Mondrian's switch to the Boogie-Woogie paintings, the complexity of the works would have exploded beyond our capabilities then! A student many years later tried the Hyper-Mondrian. It was supposed to become a database on Mondrian, taking the New York Boogie-Woogie as a starting point. In its colourful bars, you would find Mondrian's complete works. In one painting you would find everything. This project never got off the ground. It may happen that you have a fruitful idea, but technology is not ready for it. But then, one day, you find that everybody is doing it.

AUDIENCE: Talking about the comparison between the 60s and 70s and what you just said, Martin, I believe that information aesthetics is not a thing anymore of nerdy computer scientists trying to figure out mathematics behind aesthetics on the computer screen, but that it is something that concerns the masses and that we are confronted with every day, so it really is a different thing, and also what you said yesterday triggered my mind, when you talked about a new face of the cultural industry. And I think it hasn't really been analysed yet, that new face. I'm not sure whether we should talk about industry any more, I mean, maybe we need another term, but I do think that if you compare the two periods, 60s and 90s, that there has been a political turn in the analysis of data culture. And that it didn't exist in the same way in the 60s.

MANOVICH: Which turn?

AUDIENCE: A political turn. I mean, does it need any more political analysis? I mean, Adorno and Horkheimer, they wrote that book out of an urge, because the culture industry was benumbing people, making everyone, turning everyone – or at least that was their claim – into some kind of monotonous human being, and they wanted to argue against that, and maybe something like that, some kind of political theory about data culture, including the complexity of the backend and frontend that we were talking about these past two days, still needs to be drawn up?

NAKE: A critique of political technology, maybe, to take up a famous title from the 19th century.

MANOVICH: We had an amazingly rich theoretical period in humanities, beginning in the 50s and ending in the 80s. But people miss that the best media theorists during this period got their start by thinking about advertising! The article about semiotics by Roland Barthes I already mentioned uses as an example an advertisement. Marshall McLuhan? His first book *The Mechanical Bride* (1951) analyses advertising. And soon Baudrillard talking about what? Advertising [*The System of*

2 Frieder Nake: *Ästhetik als Informationsverarbeitung*, Wien / New York 1974.

Objects, 1968]. Okay? So this is where it starts. So we need to pay more attention to what the cultural industry says and what it does. This is a good place to start: analysing the techniques and theories of cultural industry.

AUDIENCE: But then it has to be updated.

MANOVICH: Of course.

SONIA FIZEK: I don't have a question but a comment. What you have been discussing for the past two days is really fascinating. And it fascinates me because it seems to me that for my whole academic career I've been preoccupied with structures, as we talked about yesterday. What you, Frieder, do, or what many of you have been trying to do, is to create abstract models of similarities, or of similarity of visual works. Where I come from, which is theory of literary and cultural studies, I take what you do and I see a lot of similarities in what has been done in literary theory, for example by Vladimir Propp. What he was trying to do in the morphology of the folk tale, was looking for an abstract model, again, of similarities between Russian folk tales, so looking at one literary genre. Then, when I take it even further, what Campbell has been trying to do with the idea of a monomyth, is looking, on an even bigger level of abstraction, for similarities in whatever human culture literature produces and looking for recurring structures basically of the stories that we tell, whether it's religious stories, whether it's stories that reappear in literature – storytelling in a very general sense. And then coming back to what I was trying to do, and don't think I have managed. I wouldn't say I failed, but I'm just really overwhelmed by the human necessity to boil down everything that we see – it doesn't really matter in which academic field – to a structure, to something that is graspable, to something that we can measure, basically. It really overwhelms me how much we try to measure, how much we try to quantify. And what I tried, in Game Studies, was to come up with a model of a player character in role playing games. So again, I tried to create an abstract model of similarities, but this time looking at a game play experience in different games of the same genre. And back then I thought how cool – that's coming back to your visual stuff – how cool would it be, I'm not even sure if it's possible, to boil down my game play experience to something that is not described by words, because I had to deal with words, tables. I tried to create a model that would again just squeeze down the experience of a game play into something that is repetitive, maybe something that will show that the game play experience of forming a character in this genre is basically the same in every role playing game. How do we get out of the box? When we see the structure, whether it's literary genre, computer game, whether it's data-based visual works, maybe then it's easier to get out of the box or create something that it less predictable. Or maybe we just see how predictable we are, in a sense, how structured. So I thought back then whether it would be possible to translate my game play experience not into words and tables, but into something that is actually a vi-

sual model. And I don't really know whether it's possible, how to program it. And create something that you, Lev, probably do. A visual representation of a game play experience, that was my thought back then. But I don't really know if it's possible, if it's feasible, and the last question I always have, and whether it's with reference to what I do or whether it's with reference to what you do: Why? What for? Why are you trying to study those similarities? Why are you trying to predict? Basically the big why-question. What are you trying to achieve? What kind of questions are you trying to answer with abstract models and boiling down into structures? That would be my big question, basically.

MANOVICH: Can I possibly have a 90-seconds-answer, because it's something I wanted to respond to, even before your question. And to me it's the single most important thing: why cultural analytics? And also I want to say something about the difference between the 19th century, the 20th century and today. In the 19th century people didn't have computers, or other tools to keep track of differences between thousands and millions of objects. So what you have is a huge project of reduction. Statistics, which comes to dominate social imagination and also social sciences and the governments, reduces diverse populations to a few numbers. The same thing happens in social sciences and humanities. Marx reduces society to two classes – how great is that? Freud reduces the mind to three layers – not too complex, is it? Propp reduces folk tales to 31 functions, and eventually in the 60s Greimas reduces all culture to a semiotic square. So I think the early computers, including the information aesthetics, participate in this 19th/20th century movement of reduction, which means when you look for similarities between objects – humans, objects, folk tales, species, doesn't matter – and you throw away the differences. We now have pretty powerful computers. You can have a database on your laptop with many thousands of variables for all seven billion people in the world or every single tweet ever twittered, etc. So to me, the great project of the 21st century – and cultural analytics is hopefully just contributing a little atom to that – is to think about societies and cultures in new way, without big reductions, and instead fully take into account diversity and variability. This is the complete opposite of structuralism, Karl Marx, and modern social statistics. Because now we have tools, we have machinery, which allows us to represent variability and diversity: what is different between all the art works in the Metropolitan Museum of Art, or all artworks ever created and preserved – as opposed to dividing them into a small number of categories. Now, how are we going to do it? That's the great project for young people, because of course the human mind also participates in the 19th century project of trying to divide the world into a small number of categories. The human mind has evolved to see the world in terms of categories, and this is the problem! The only person in the world who understands this clearly is Bruno Latour, who said that data visualization is central to the social sciences because it can allow us to think about categories. He said it, but of course Latour himself doesn't program, so he may not be able to give practical guidance. So this is the great project for the new

generation. It's the opposite of what you were referring to. We're looking for patterns, but without trying to reduce things to what's similar. Instead, we are looking for what's different, what's variable between the objects. The computer can do it, the computer can keep track of the variability across every image ever painted by human beings. But how can the human think as a computer? That's the big question for the next twenty years. That's what the young people have to work on.

HERMANN PFLÜGER: I am a computer scientist and I have a very simple model of perception. For me, perception is 60% bottom-up and 40% top-down. Bottom-up means it's sensory dependent and top-down means it's cognitive dependent. I think I can simulate the 60% of bottom-up, but I can't simulate the 40% of top-down. There are two sides to it: the bad side is that I can simulate 60% of the human perception and the good side is that I can only simulate 60% of human perception. And to this question: if you transform cognitive stuff with an algorithm, you lose 40% of the content. With every transformation with a program or a computer you lose 40%, but you can do your transformation.

FIEZEK: But I was just asking myself why? What for? That is the ultimate question.

PFLÜGER: Why you lose 40%?

FIEZEK: No, why would I do it? I worked on something for four years, I came up with a nice structure, probably very subjective in a way that I was working with whatever I could perceive, I was trying to boil down things that probably a computer would do a lot better. If there was a program that would allow me to do it. That's actually one of the critiques I got. Like, okay, that's close reading again, it's a first person perspective close reading looking for patterns. But even if I conducted a statistical study, a sociological study, or even if I used computers to help me with all those variables – I wonder, by the way, what would happen if we tried to do whatever Vladimir Propp did with a huge database. Maybe it has been done, it probably has. To what kind of conclusions would we actually come? To similar conclusions? Would we end up with those twenty functions or would it be totally different?

MANOVICH: You know, Propp only analysed a few hundred folk tales. So his data set was very tiny in today's standards.

FIEZEK: But still, even if we took Propp's work and did it these days and we took, let's say, as many tales as possible, my question would still be: what for? It's a very philosophical question, actually, but I don't know the answer to it. I would be really happy if you tackled it, basically, why?

MANOVICH: I can answer it. The answer is very simple: To learn to think about categories. Now, how to learn it, that's a difficult question. That's the simple an-

swer for me. All my research since 2007 is devoted to this question. But I'm not saying it's everybody's answer.

FIEZEK: Otherwise it wouldn't make sense.

MANOVICH: How to understand variability as opposed to similarity.

TARA ZEPPEL: Just picking up on what you were just discussing, I have a question, sort of a throwback to the 1960s. Of course, I am coming from a cultural analytics perspective, so you were talking about boiling things down to structure and you asked why. The reason to boil it down to structure is, as Lev mentioned, to understand the complexity or diversity. It's not boiling it down. And I'm wondering to what extent that was also true in the 1960s. That you boil it down through some sort of technological fascination or technological masturbation, let's call it that with the available tools, right? But it always seems to be in order to get a deeper level of understanding. At least that's how I'm approaching stuff from today, so I was interested in comparing that to historical perspectives.

MANOVICH: What was the purpose in analysing Mondrian, basically?

NAKE: I cannot deeply answer the why-question, but I would try to think loudly about it. Answering is different from uttering something. The purpose of analysing Mondrian was doing something that I believed nobody had tried before. And through this, learn something.

But the why-question, as I understand it, goes deeper. Some strange (or not so strange) eroticism is involved when you program a computer. We may have lost some of this eroticism since the computer became a commodity. The eroticism may have had its basis in making the machine draw, although it was made for computing. This was surprising.

I published a note in 1971 under the title *There should be no computer art*. Soon after, I quit the field that I had a loving relation with. Your question was, what do we do this for? My short note said, doing computer art was irresponsible – in view of the war in Vietnam, in view of rationalising human labour, in view of controlling private lives. The computer is the machine for capitalism to move on. For many derived purposes also. But they are of secondary character.

For fourteen years, I engaged in radical politics, after which time I gradually returned to media art and new views of the computer. I did not ask the why-question anymore. Why I did not ask it again, I cannot tell. We do change during our lifetime. We change because the world around has changed.

BESPRECHUNGEN

Stephan Günzel: *Egoshoooter – Das Raumbild des Computerspiels*, Frankfurt a. M./New York: Campus 2012, 400 S.

Computerspiele sind im Kommen. Was in den 1980er Jahren noch als exotische Hobby einiger vermeintlich ebenso technikbegeisterter wie sozial unterentwickelter Nerds gehandelt wurde und in den 2000er Jahren von den Boulevardmedien gerne als potentiell gewaltbeförderndes, nur vermeintlich harmloses Freizeitvergnügen diffamiert worden ist, ist schon lange in der Mitte der Gesellschaft angekommen. Nicht allein stößt die Computerspieleindustrie heute in Umsatzregionen vor, die vormals nur der Film- und Musikindustrie vorbehalten zu sein schienen, sondern Computerspiele sind ein fester Bestandteil der Alltagskultur geworden – gerade bei der Generation der heute unter 40-Jährigen. Ein neues ästhetisches Medium ist geboren worden und die mitunter nachhallenden Klagen darüber sind in der Ohren mediengeschichtlich geschulter Beobachter Reflexe, die die Geburt aller neuen ästhetischen Medien in der Moderne begleitet haben; die Behauptung ein schlechten Einflusses des Computerspiels auf die Jugend hat ein Analogon in vergleichbaren Warnungen zum Zeitpunkt der Entstehung des Films. Zwar schweigt sich die philosophische Ästhetik zumindest in Deutschland in weiten Teilen zu Computerspielen noch aus.¹ Gleichwohl hat sich im Lichte der steigenden gesellschaftlichen Relevanz von Computerspielen seit geraumer Zeit eine eigenständige Disziplin, nämlich die Game Studies, herausgebildet. Bei den Game Studies handelt es sich zwar nicht unbedingt um einen einheitlichen Diskussionszusammenhang – nach wie vor sind ihre Fragen und Methoden, im Rahmen derer und in denen sich an Computerspielen abgearbeitet wird, ausgesprochen heterogen.² Allerdings gewinnen sie auch an institutioneller Relevanz, vor allem in der Medienwissenschaft. Der Autor des vorliegenden Buches kann ohne Übertreibung Wegbegleiter der deutschen Game Studies seit ihren Anfängen wie gleichermaßen als einer ihrer Protagonisten gelten und hat mit dem Buch »Egoshoooter« nun sein Opus Magnum vorgelegt.

¹ In der analytischen Ästhetik sieht es etwas anders aus. Einschlägig ist hier Grant Tavin *The Art of Videogames*, New York 2009. Selbst Berys Gaut kommt in seinem Buch zum Film 2010 nicht darum herum, sich eingehender mit Computerspielen zu beschäftigen – die er frei in problematischer Weise als bloße Unterkategorie des Films behandelt. Vgl. Berys Gaut: *A Philosophy of Cinematic Art*, Cambridge 2010, etwa 1.2.

² Einen guten Überblick bietet die kooperative Juniuss-Einführung wichtiger Vertreter deutscher Game Studies sowie das Handbuch von Johannes Fromme und Alexander Unger. Gamescoop: *Theorien des Computerspiels zur Einführung*, Hamburg 2012; *Computer Games and Media Cultures – A Handbook of Digital Game Studies*, hg. von Johannes Fromme und Alexander Unger, Dordrecht/Heidelberg 2012.

ZEITSCHRIFT FÜR ÄSTHETIK UND ALLGEMEINE KUNSTWISSENSCHAFT

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