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Computergrafik

Christoph Klütsch: Computergrafik. Ästhetische Experimente zwischen zwei Kulturen. Die Anfänge der Computerkunst in den 1960er Jahren. Springer. Wien New York, 2007

The subject is best defined in the double subtitle: »Aesthetic experiments between two cultures« and »The beginnings of computer art in the 1960s.« Indeed, Christoph Klütsch, who wrote this book as his doctoral thesis, delivers a good overview of the »baby steps« of what today is called—in a rather undifferentiated manner—computer art. He cannot avoid the silly theme of who was first, but he is quite correct in referring to A. Michael Noll (his work at Bell Labs in August 1962), as well as to Georg Nees' first show at the Studien Gallerie (Stuttgart, February 5-19, 1965). In general, Klütsch is rather precise. He researched the subject meticulously and manages to avoid the big ego conflicts that overshadow the modest history of the beginnings. Appropriately, he points out that quite a number of timelines document the beginnings, none free of a certain amusing bias, and none willing to integrate experiences outside the culture within which they were elaborated. East Europe, for example, remains an ignored Terra Incognita!

The first subtitle is most telling for this book. It suggests a context of interpretation that the more informed reader can easily identify: C.P. Snow's classic text, first delivered as a Rede Lecture. Klütsch is definitely correct in making reference to the tradition of these lectures, which is centuries old. I am not surprised that the Two Cultures play such an important role in Klütsch's book. After all, his doctoral advisor is none other than Frieder Nake, who repeatedly argued in favor of a broader intellectual understanding of inquiry into computer-supported art. It is very relevant that this book is not just a collection of data regarding the beginnings, but rather an ambitious attempt to place those beginnings in an intellectual context. C.P. Snow's call for a bridge between the sciences and the humanities resulted not only in the 20 honorary titles bestowed on him after his lecture, but also in prompting many to overcome the ever deeper rupture between the breadth of the humanistic view and the depth of scientific specializations. Klütsch is thorough in documen-

ting how young scientists—mathematicians, physicists, electronic engineers—discovered artistic possibilities in the new machines. It goes to his credit that he does not ignore the fact that some of the pioneers came from the opposite pole, i.e., from the »other culture.« I refer here to Manfred Mohr, Harold Cohen, and Vera Molnar, to name only three.

I was happy to read accurate considerations of the story parallel to that of computer graphics, that is, the theoretic foundation and the many questions addressed in those years of experimentation. It is not only information theory (Shannon), not only cybernetics (Wiener), and not only mathematics (Birkhoff), but also syntax theory (Chomsky), experimental aesthetics (Berlyne), and statistical style analysis (Fuchs, whose name is the subject of an embarrassing spelling error in the book—unfortunately there are quite a number of other such errors) that Klütsch aptly introduces in defining the broad intellectual context. Sure, semiotics also enters the picture, but unfortunately more in reference to Max Bense's understanding of C.S. Peirce, which at that time was incomplete, at best. Bense was an enthusiast, but not necessarily a meticulous scholar. Many times he took important ideas and wrote his own »stories« around them. I Peirce's case this was not difficult.

The most important component—aesthetics—is well documented. Abraham Moles is correctly introduced as yet another visionary theoretician. As we know, Moles argued in favor of a synthesis. Even if at times he was rather naive in believing that, through information theory, those less inclined to science would be able to join »the company of gravitational theory, atomic theory, electromagnetic theory, general relativity, etc.,« Moles was able to make the distinction between information and meaning. He defined information as novelty, and this definition goes well beyond the foundation in the Second Law of Thermodynamics. Moles focused on communication, and was acutely aware of the role of perception. His research includes the understanding of the perception of music; and he was able to anchor his work in the empirical, conducting experiments that remain a very convincing reference for those who work in the aesthetics of the new media.

The mercurial Max Bense played a fascinating role in stimulating his brilliant students to explore questions of aesthetics from a new perspective. Bense receives a more generous presentation in this book than does Moles. In all fairness, he deserves it. After all, he coined the notion of generative aesthetics, and he was able to attract around him people like Georg Nees, Frieder Nake, Helmar Franke, and Rul Gunzenhäuser, among others. Klütsch correctly frames Bense's contributions in a broader perspective (Wölflinn, Panofsky, Kandinsky), and this contributes, in my view, to a better understanding of his assertions. Bense, whom I experienced as unpredictable, was a catalyst. It is a shame that his work remains known mainly in the German-speaking culture; just as it is really a shame that the Stuttgart beginnings, independent of the simultaneous beginnings in the USA, have not yet been duly acknowledged, not to say subjected to scholarly debate. I very much respect the fact that Klütsch provides solid arguments for a better understanding of what defines the Stuttgart beginnings. In one of Vera Molnar's well-known texts (Transformations, 1976), she quotes J.J. Winckelmann: »Der Pinsel, den der Kunstler führt, soll im Verstand getunkt sein,› (The paintbursh that the artist wields should be dipped in knowledge). Winckelmann's call, obviously preceding the many debates on the nature of art in a time of scientific and technological innovation, is the long and short of Bense's contribution. He was excellent in stirring things up; he himself was passionate in affirming the role of knowledge. As I write these lines, I cannot help but let my memories of various interactions with Bense act as a filter. Indeed, Bense would

argue in favor of rationality, although he himself was quite often an example of the opposite. He disseminated, with passion, a great amount of information. Some of this information derived from his interest in philosophy, and some from his extensive, although at times superficial, readings of science, in particular mathematics. Some information came from his love of literature, and quite a bit from the trivia of societal life. When he wrote about the programming of the beautiful, he had the literary beautiful in mind, while his students, as the book documents, were inclined towards images. The four possibilities for an analytic aesthetics that he spelled out—the semiotic, which produces classifications; the metric; the statistical; the typological—were supposed to offer objective descriptions. His inspired distinction between a measure of order on a macro level and a measure of complexity on a micro level was supposed to inform programs and programming. Interestingly enough, randomness is not a concept that found a distinct place in Bense's theory, but his students got ahead of their master and adopted it nevertheless.

I like the detailed analysis that Klütsch gives to the work of Georg Nees under the heading »Wege zu einer exakten Ästhetik« (Paths to an exact aesthetics). Nees obtained his Ph.D. with his thesis Generative Computergraphik (1969). As happens in all beginnings, Nees would base his research on the syntactic level. One weak section, in my opinion, is dedicated to Noll. And I'm not sure that the discussion of the computer as a medium does justice to the subject, or to Noll for that matter. Noll needs to be understood in a broader context, and so does the famous Bell Labs—a place where so many »hot« ideas emerged at a time when it was easier to write scientific papers on the Gaussian-Quadratic than essays on new aesthetic expression. The shows (in particular, at the Howard Wise Gallery in New York) made the issue of the two cultures—»I think the two cultures are the same,« Noll wrote—so much more tangible than the academic papers of the time. Noll refused the »gibberish« of the intellectual discourse and eventually learned from art (in particular, Mondrian's) how to make selections. But he remained an engineer—a visionary engineer.

Two more important artists are discussed—one is Klütsch's advisor, Frieder Nake the tiresome visionary, the other is Manfred Mohr—under the very inspired section title, »The programming of one's own style (1969-1972).« (By the way, Harold Cohen's work would perfectly fit under the same heading.) I would argue that the two sections devoted to them deserve to be published separately, as introductions to the respective works of these two artists. Klütsch provides important details pertinent to each individual, as well as to the impact their work has on computer graphics in general. If the book consisted of only these two chapters, it would still deserve the full attention of all those trying to understand the beginnings. I myself wrote about Manfred Mohr, as well as about Frieder Nake, therefore I will not repeat here the details that Klütsch so successfully makes available. Let me mention only one detail: The dialectic view advanced by a Marxist (durch und durch) such as Nake caused quite a bit of discussion. Gary William Smith (followed by others, such as John. G. Seal) could not miss the occasion to attack this position, which in reality he never really understood.

In reviewing a book like this one, I am confronted not only with a wealth of information, but also with my own experience of the same events. I vividly recall my discussion with Klütsch during my visiting appointment in the Computer Science Department at the University of Bremen, as I remember my contacts with the majority of those whose works or thoughts are captured in the book. Having tried, myself—in the late 1960s—to produce images on a computer (in Romania,

where there were not many of them), I have the advantage of realizing how difficult the task was in those years. But I'm also biased. By no means would I express less than deepest respect for those who took up the challenge. I own some of the works mentioned or reproduced in the book; I own some of the catalogs of the very first shows. Lucky me, I've lived long enough to see how what at the beginning looked rudimentary at best, today has become part of the artistic conscience—but also of the art business. (Nake warned like nobody else about this development.) There is so much mediocrity generated with computers that at times I wonder what would have happened if no one, but the famous monkeys, had ever tried. But there is also undiminished interest in experimenting. In view of this fervor, I wish the beginnings had been more daring and the questions asked more probing. For me, the major challenge was and remains in the conceptual realm. So far the weakest in this new field of inquiry.

The computer is yet another embodiment of a deterministic view of the world. In this respect, if a work is the expression of an algorithm, it will only reproduce the rules encapsulated in the algorithm. Many years ago, I upset the rapidly growing community of computer artists (as they called themselves) by stating, »If you've seen one computer-generated image, you've seen them all,« (cf. The Aesthetics of Computer Graphics, panel discussion at Annual SIGGRAPH Conference, San Francisco, July 22-26, 1985). This was an exaggeration (probably in the Bense tradition), but not unjustified. Although computer graphics today is so much richer in possibilities, the final image is as artificial as the majority of images generated when computers had limited possibilities (the 8- and 16-bit machines, the slow processors, limited bandwidth). On the other hand, I see the hybrid human being-computer as a medium of interaction transcending determinism. Nake wanted to replace intuition with randomness. Today he is passionate about interaction. In our days, we are able to integrate intuition and randomness, and this results in a fundamentally different situation. In my own attempts to generate images and sounds, my focus was on a theoretic question: Can machines be used for creative purposes? The »classics« of computer art (I still refuse this expression that does not do justice to either art nor to computers) automatically accepted that their creativity will expand into the creativity of the tools they were attracted to.

I would have enjoyed reading in this book the particular questions articulated by the artists described in it. Nake's questions, Mohr's questions—which I know in detail—remain of extreme relevance to aesthetics. It was in the spirit of keeping these questions alive that I suggested an exhibit of Nake's work to the daring director of the Kunsthalle in Bremen, the mercurial Prof. Dr. Wulf Herzogenrath. I would have been happy if, parallel to the show (9 November 2004-16 January 2005), the MIT Press had brought out an English edition of Nake's Ästhetik als Informationsverarbeitung. Grundlagen und Anwendungen der Informatik im Bereich ästhetischer Produktion und Kritik (Springer: WienNewYork, 1974). It is a fundamental book, impossible to ignore if we want to understand the beginnings and even the current stage in the use of computers by artists. But in respect to this second proposal, I have remained so far unsuccessful. In closing, I would like to express my hope that someone will write a book on the art of those somewhat romantic beginnings, and try to make the connection between the art of that moment (it was the time of Escher, Warhol, Op-Art, Liechtenstein, etc.) and the attempt to tame the machine for aesthetic purposes. Music will have to figure high in those considerations, since musicians were well ahead of all artists in experimenting with machines. Based on how Klütsch wrote this book, he would qualify as a very suitable author.

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