LEA

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VOL 17 NO 1 A collection of articles, reviews and opinion pieces that discuss and analyze the complexity of mixing things together as a process that is not necessarily undertaken in an orderly and organized manner. Wide open opportunity to discuss issues in interdisciplinary education; art, science and technology interactions; personal artistic practices; history of re-combinatory practices; hybridizations between old and new media; cultural creolization; curatorial studies and more.

Contributions from

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and other important cultural operators.

MISHMASH

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ORDER
in Complexity

by

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Order in complexity. Yes, of course, when confronted with a complex situation, we usually search for order. Otherwise we have no chance to make sense out of the situation. We *make* sense, and it seems we always want to make it. Sense is not there to discover. It requires our activity. It is a construction.

"Stop making sense!" Remember? But, as humans, we have no choice. It is our condition. "Stop making sense" therefore sounds beautiful and is a nice challenge. But the next moment, we start thinking about what sense there could be in stopping to make sense. Making sense could be interpreted as looking for order in complexity, or as creating a new semiotic layer on top of the given. A new layer of signs – is this not the essence of sense?

In some way, however, *order* sounds boring. Order – that's the police. The law. Complexity – that is society. Capitalist society to be more specific. The state installs its police in order to curb and control complex relations between and inside social groups and classes. But the state is the state of the ruling classes and is, therefore, pursuing their interests. Or rather, the state

is an instrument of the classes in power to defend them against the masses. (Rather old-fashioned, is it not?)

Is this of any relevance here, on the virtual pages of an electronic journal? Not really, in some way, but really in some other. Mish mash. This and that. You sit at your home desk and look out of the window, where you see young girls on horseback. Those mighty animals, full of energy, could, in one sudden strong, elegant, and chaotic outbreak of their innate wildness kill the little girls. But instead the horses behave in the tamest, almost timid way, waiting for the next stupid command by the hand or leg of the girl on their back. It is as if the horses wanted to show the little humans that they have learned their lesson and how intelligent they are. Order in complexity. Mish mash.

When George David Birkhoff, the US-American mathematician, developed his theory of *aesthetic measure* (between 1928 and 1933) – what may have been his personal feelings, I wonder, looking out of the morning window by my home workplace. [1] The act of defining the formula, $M = O / C$, as an expression of aesthetic measure with the inherent intent to quantitatively interpret O ("order") and C ("complexity"), may have been exciting. But mustn't such a step have been depressing at the same time? The reduction from the exciting complexity of a work of art to just one number denies and negates that complexity for the sake, literally, of some strange order. Bold and depressing. Sensory and sensual complexity in perceiving, vs. symbolic and logical simplicity. Connected in cognition?

Was Birkhoff aware of the radical reduction his formulae meant? Ever since Alexander Baumgarten, aesthetics has been about sensual perception, not about art or beauty. [2] We all know this and, perhaps, even share this view. The art of Birkhoff's time, of the late 1920s and early 1930s, was art by Mondrian, Klee, Schwitters,

de Chirico, Magritte, Picasso, or Matisse, to name at random just a few, whose names come to my mind. (In parentheses, I want to add how sorry I am for not being allowed to include small reproductions of works of these artists, due to copyright regulations. It is hard to accept for a scientist.) Can we seriously believe to be able, in each of these cases, to come up with quantitative definitions of order and complexity that would make any sense? Not less than such operative definitions of the abstract and empty terms "order" and "complexity" are required if we want to make more sense out of the empty formula, O / C .

When we are engaged in a conversation about a given image, we may offer good, sometimes convincing, sometimes not so clear interpretations of what we observe in the image as "order" or "complexity" and as the relation between the two. But conversation is one, and a formula is different. Relentlessly it requires quantity and number. Measure! Don't talk about values, apply the yardstick. The request of the formula stops the enlightening discourse. A cut through the relation between subject and object, and a cut through the relation between subjects, therefore.

I once believed in aesthetics of the object. The subject in contrast stood for emotion. And an aesthetics soaked by emotion was Nazi Germany's aesthetics. Max Bense taught us in his exciting way never again to trust emotion. I have long given up on this. But there are moments when I wonder.

George Birkhoff applied his pale theoretical approach towards an aesthetic measure, e.g., to a large collection of polygons. You find ninety of them reprinted in Barrow. [3] Their aesthetic measures range from 1.5 for the square via the swastika (place 41 for its measure of 0.33) down to a triangle with concavities (-0.17). Not many listened to Birkhoff. But he sparked some debate, and his ideas get taken up once every ten

Figure 1. The first 15 of 90 polygons, whose aesthetic measure Birkhoff evaluated in 1933.
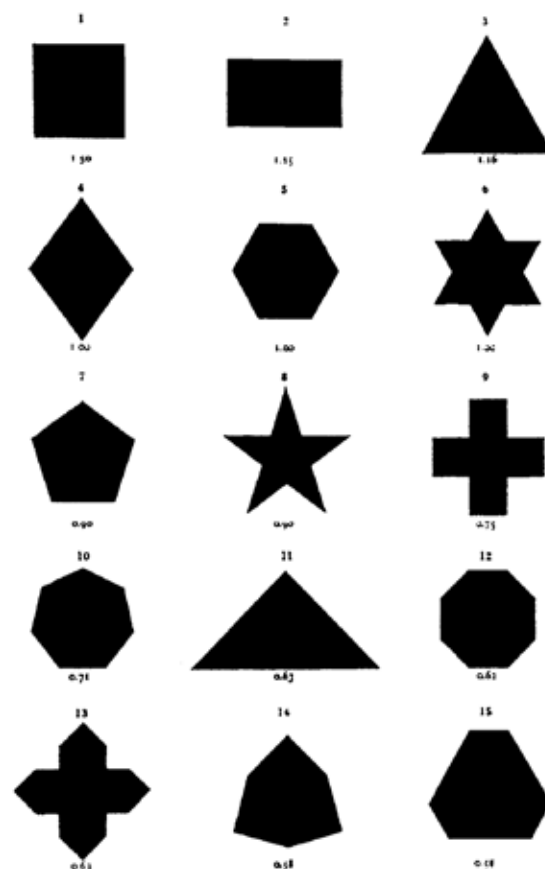
years, it seems. Research. Invention. Publication. Order and police. Mish and mash.

Thirty years after its publication, the general Birkhoff formula was given a new interpretation in terms of Shannon's measure of the statistical information content. [4] [5] In Germany and, perhaps, a few other places, some believed in such heroic attempts. But heroes are heroes insofar as they must lose. In the end, they must be defeated, if only by betrayal. So the heroic time of the Stuttgart school of aesthetics of the object has gone. The term, *information aesthetics*, however, has re-appeared in a totally different meaning. We also see *aesthetic computing, computational aesthetics*, and similar terms. Their meaning now is more of an attitude, a pragmatic approach, and recognition that algorithmic means have entered the world of non-computability. Weird in some way.

Only the computable counts in the world of digital media. However, digital culture does not only appear as a culture of the computable. It is, at the same time, an event culture and a place for fun. Mishmash. Order in chaos.

In 1968, computers were still bulky, large, and extremely expensive. They were still machines in the strict sense of the word. There was probably not a single private individual in the world who would afford buying a computer. The idea of doing this would have been as crazy as buying any other factory machine. A private individual would have not only needed a large pile of cash, and a large air-conditioned room. Almost as indispensable would have been a skilled technician to look after the machine. The idea that such a huge machine could one day be carried around by a child under any weather condition would simply not have appeared. From all aspects, the computer was a *machine*, and private people don't usually think of buy-

ing machines. Nevertheless, in hindsight, the roots of digital *media* were laid in the mid 1960s.

The year 1968 did not only lend its name to the youth rebellion that set the final end to post-war society, it also brought two events that gave a glimpse of the new coming world of digital media. These events were the exhibition "Cybernetic serendipity. The computer and the arts" in London's Institute for Contemporary Arts (ICA), and the symposium "Tendencies 4. Computers and visual research" in the Galleries of the city of Zagreb.

The London event stood for the spectacle character of digital media: noise, lots of people, fun, kids. ICA explicitly mentioned the arts in the exhibition's title even though the concept of art had to be pushed to its limits to fit for the massive display of machinery in the gallery rooms of ICA. It should be noted that the New York Museum of Modern Art showed, as an event of

art, "The machine as seen at the end of the mechanical age" at the same time.

In Zagreb, an entire series of manifestations was started at exactly the same time and lasted until 1973. During five years, a group of dedicated museum people and artists generated several exhibitions and symposia, and published a bilingual magazine of high quality, *bit international*. Although the curators used the term "visual research" instead of "art", their manifestations stood in the tradition of the New Tendencies movement of European concrete and constructive art that had staged exhibitions in Zagreb and elsewhere in 1961, 1963, and 1965. At the geographic fringes of the mainstream of art, computer art was accepted into the traditional world of art without any hesitation.

Looking back in history, it appears that, in 1968, the event character and the research character of digital media surfaced at two different European places at the same time. Is it too far-fetched to claim that this date marks the incubation of digital media? Media, that share properties with traditional media, but that also rely for their existence on the machine of computation.

Digital media need for their fruitful development the tension and contradiction of algorithmics and aesthetics. This is the tension of the computable and the perceivable, of the brain's and the senses' work. When computer art later left behind the form of paper work to be put up on a wall, and became an interactive installation, it gained the dimension where the computer was needed inherently, and not just as a convenience. The traditional phase of computer art was necessary to run experiments and get acquainted with the situation of creating a piece of art without touching the material. It was necessary to gain enough experience and learn from critique. But only in the interactive dimension the computer's innovative potentials were

tapped and released. They are found in the rapid repetition of the same structures with constantly changing concrete parameter values. Order in complexity.

Incidentally, the early ink-on-paper-in-frame phase of computer art must be considered as the McLuhan period of computer art. [6] A new medium relies in content on its predecessors before it matures to the point of its own adequate contents. "The medium is the message" was McLuhan's slogan for this.

In the interactive installation, forms of art emerged that need the computer to allow for expressions otherwise not obtainable. With a word of Max Bense's, such expressions may be called *die präzisen Vergnügen* (precise delights). [7] ■

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