

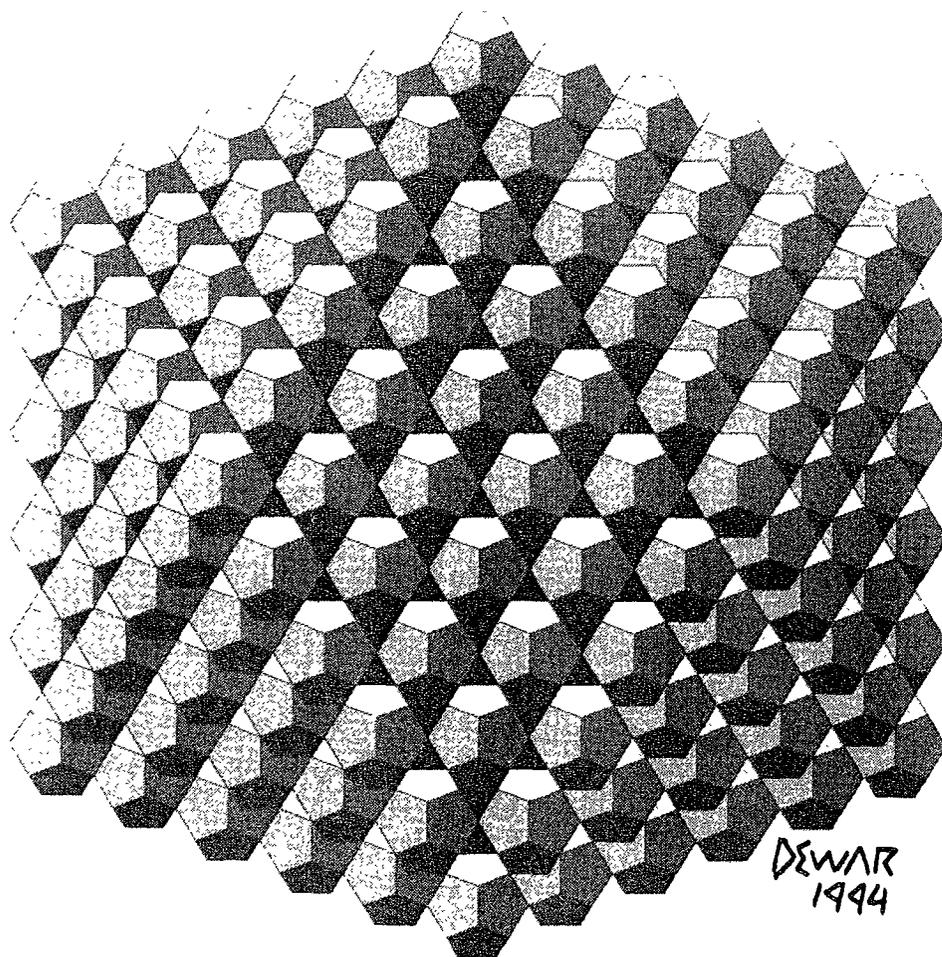
# Symmetry: Culture and Science

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STRUCTURES ON THE EDGE BETWEEN  
CHAOS AND ORDER

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Already some time we are familiar with the similar-different aspects of the discussion on chaos and order. What so far most of the times is left out of the discussion is the possible contribution of art. One reason is obvious: the knowledge what art could be about is vague and difficult to rationalize. But, still, we seem to have come upon a point in the history of the development of our knowledge that we have started to appreciate *visual* knowledge again, as is proved for instance in the need for computer-simulations or use of complex models. We all have the experience at one time or another to understand a complex problem by almost one glance at a diagram or image or simulation. Why then not have another look at what we call art? Every artist assembles pictorial elements into a certain kind of order which he only perceives at a certain moment by a process of mainly non-verbal argumentation, the creative process. In this paper I will try to show that there are several reasons to assume that artworks show remarkable analogies to the structuring processes we currently discuss. Analogies which can help us understand the part of our development of knowledge that is non-verbal and difficult to define.

### our perception

Because the human is exceptional visually oriented and, like science had to acknowledge not too long ago, we mainly think in images and, besides, to stimulate our own understanding we seem to need to see the subject of our thinking before ourselves (like the sketching or scribbling on paper to clarify something), it is an important part of our process of becoming conscious, that we project impressions, ideas, concepts into reality - into the space before us into the so-called "projective field". Contrary to what is commonly thought, the evaluation of the subject we sketch or write about does not take place at the end of the thinking process, but evaluation is a continuous process and can be understood as a kind of argumentation, visual argumentation. We only become conscious of something through reflection. Reflection, the word already implies it, means mirroring. Thinking, reflecting is mirroring. When we think about something we mirror that about which we are or are not thinking consciously as it were in a sketch, scribble, diagram or text before our own eyes. Thus we can find through all cultures and times that man made in a natural way all kinds of orders and structures, which man perceived around him.

### our everyday's reality

This led in the 80-ies to a search for a Theory of Everything and Theory of Complexity. Mitchell Waldrop describes the motive for the approach of the Santa Fé Institute towards a Theory of Complexity as follows: *"The universe started out*

*from the formless miasma of the Big bang. And ever since then it's been governed by an inexorable tendency toward disorder, dissolution, and decay, as described by the second law of thermodynamics. Yet the universe has also managed to bring forth structure on every scale: galaxies, stars, planets, bacteria, plants, animals, and brains. How? Is the cosmic compulsion for disorder matched by an equally powerful compulsion for order, structure and organization? And if so, how can both processes be going on at once?"* That is why one tries to incorporate all relations, the unavoidable interactions and the continuous changing circumstances in the research. Key-words are "emergence", "autocatalysis" and "on the edge of chaos". In the Theory of Complexity one accepts that caused by the pluriformity of interrelated events there will never be a situation in which the circumstances stay the same and, therefore, one speaks about a situation "on the edge of chaos".

Examples, which show how important the relationship is between the different parts can often be found in art, as for example in Charles Biederman's or my own works.

### **art as reflection**

This subject's complex coherence demands a continuous research. Especially, because the abstract image and your or my reality are not so different as you might have expected originally. Our knowledge on what reality is, precedes, so to speak, a more conscious approach of design. And a more conscious handling of design will benefit us all. Artists combine the translation of their understanding of reality

supported by their visual expertise with concepts of other disciplines, that also contribute to the understanding of our reality. This paper will be illustrated by many slides, aiming to show the remarkable analogies between artistic and scientific views.

N.B.

The PRO Foundation is a not for profit organization, founded in 1986 with the aim to stimulate international dialogue on the subject of improving the quality of life by improving the design of our everyday's environment. In this discussion the connection from both verbal and visual theoretical thought through fine art to application in society' still is considered obvious and necessary. This makes the understanding of reality and reality perception necessary and, therefore, the discussion of the analogies between art, science and technology. The PRO Foundation is initiating activities in this direction, leading to exhibitions, conferences, lectures, publications.