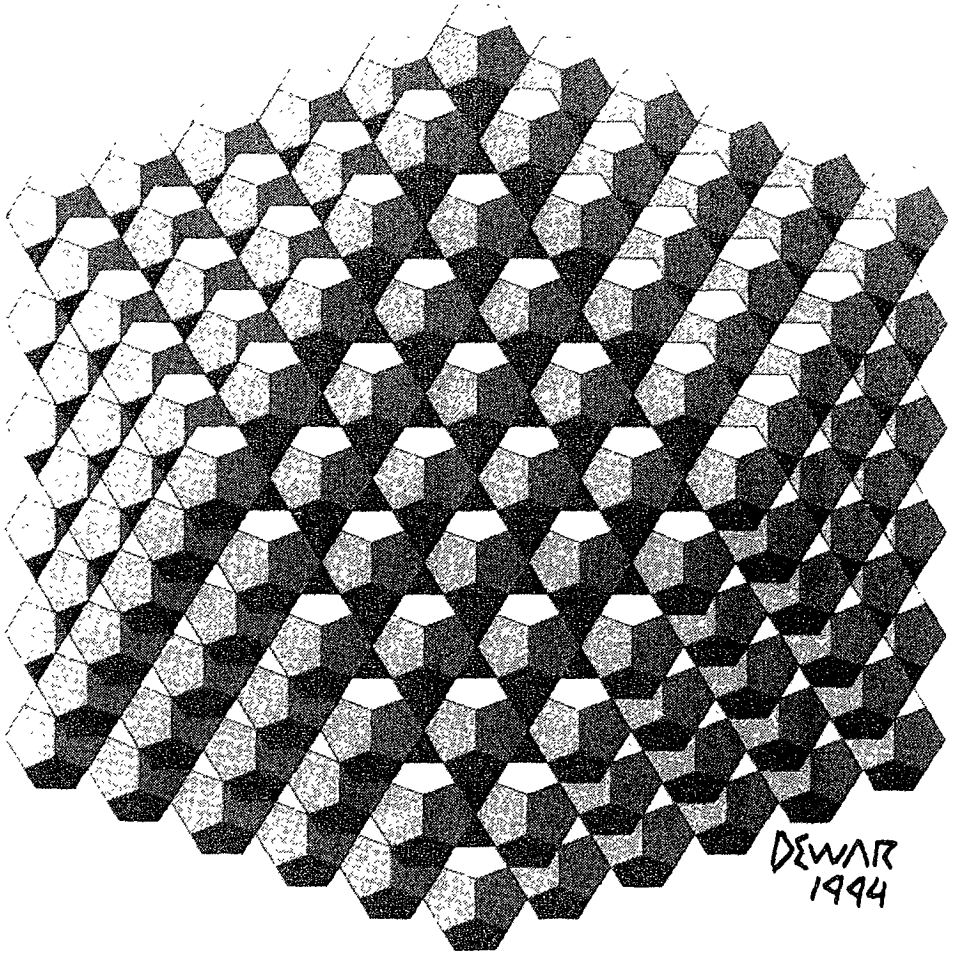
Symmetry: Culture and Science

Symmetry:
Natural and Artificial, 3

The Quarterly of the
International Society for the
Interdisciplinary Study of Symmetry
(ISIS-Symmetry)

Editors:
György Darvas and Dénes Nagy

Volume 6, Number 3, 1995



Third Interdisciplinary Symmetry Congress and Exhibition
Washington, D.C., U.S.A. August 14 - 20, 1995

THE CREATIVE UNIVERSE

Asghar T. Minai, Professor,
School of Architecture & Planning,
Howard University, Washington DC, 20059, USA

Creativity has always been characterized as a quality of mental function that some people have and others do not. Here in this paper, it will be argued that creativity is a function of open and complex systems such as nature and natural processes. That is, the creative universe is an inseparable flux of a very large number of emerging processes. Furthermore, it will be argued that the very fuzzy phenomenon that sometimes in the past was considered "unreal," "noise," "error," or what is known today as chaos, entropy, or information could be the very source of creativity in nature. What is different in this world view is that the strict rational, universal view points of the past are replaced by unique, contextual, and fuzzy-rational or intuitive decisions. A closed system by definition follows a predictable course of events which usually comes to predictable closure. A system is open and complex when components of the system have the possibility of stepping out of the system to create change, to initiate creative acts. In such circumstances an act does not fall into pre-assumed or pre-determind performances of the describable system. The Newtonian system is considered a closed, predictable, and uncreative system, whereas a quantum mechanics system is open, allowing any particle to have the choice of not obeying preassumed patterns and behaviors on its own. Complexity has more to do with dynamism in such systems rather than having gigantic dimensions and components such as Newton's world-machine. Complex and emerging processes in dynamic systems are the base for any form of creativity.

In complex systems such as the cosmic system, freedom of choice for any creative component is a bounded freedom between chance and necessity. In nature nothing exists in isolation: everything is interconnected. Therefore, any act of any subsystem has a dual function of chance and necessity. Chance is the freedom part which has to act on its own; necessity is the communication bond which ties each component to all others in the total system. 1

In search of scientific knowledge, I believe too much emphasis has been focused on regularities in nature, especially in recent history.

This has virtually eliminated the possibility of any interest in the creativity inherent in nature, which I suggest is based partly on irregularities, spontaneity, and circumstantiality and change.

Creativity involves not only regularity and repetition, but also unpredictability and it is therefore partly irregular. Heisenberg's Uncertainty Principle, which is involved in quantum mechanics, does not present irregularities as an error in nature: rather, it is the way nature is. An electron looks as though it has a mind and freedom of its own, appearing everywhere and nowhere at any given moment. We see an electron's behavior as chance, while in Whitehead's words, it may be behaving "according to its own kind of intentionality, making choices." 2

Chance and necessity are the characteristics of a complex system and the dual components of the concept of complexity. We assume creativity is an emergence, unfolding at the crossing of two opposing characteristics of nature: namely, order and disorder, predictability and unpredictability, and above all novelty on the one hand and organization (system) on the other. 3 These sets of opposing functions coexist in each other's existance and are part of the same flow and process.

This dynamic flow, namely complexity, or seeing things in context in the midst of interconnections, has been described in different ways: some refer to it in relation to their concept of autopoiesis, or ontogenesis; some refer to it in relation to their concepts of complexities driven from constraints and freedoms; still others refer to it relative to their notions of interconnectivity.

We categorize three types of creative systems in nature: the physical-material world of physical systems as self-organizing, the natural-organic world of living systems as self-reproducing, and the cerebral-mental properties of conscious systems as a self-creating world.

Notes

1- Minai, Asghar T. *Aesthetics, Mind, and Nature; A Communication Approach to the Unity of Matter and Consciousness*, Praeger Publishers, 1993

2- Whitehead, A.N., referred to by Stanley Salthe, in "Creativity in Natural Science," in *WEBcomm*, vol, 3, no. 1, p. 30

2- Minai, Asghar T. *Design as Aesthetic Communication; Structuring Random-Order; Deconstruction of Formal Rationality*, Peter Lang Publishers, New York, Beru, Frankfurt, 1984.