THEORETICAL FOUNDATION FOR JUNG'S "MANDALA SYMBOLISM"

Vladimir Gontar

Ben-Gurion University of the Negev, P.O.B. 653 Beer-Sheva 84105, Israel

The mandala as psychological phenomena appear spontaneously in dreams, in certain states of conflict, and in cases of schizophrenia [1] .
The main goal of this presentation is to give a theoretical explanation and a mathematical model for computer simulation of mandalas, based on the mechanisms of biochemical reactions in a human brain and on discrete chaotic dynamics mathematical models.
The discrete dynamics of physicochemical reactions is a new theory based on the analogy between the (-Theorem of the theory of dimensionality, the principle of maximum entropy and the stoichiometry of complex chemical reactions[2,3].
Application of this theory to the spatiotemporal behavior of complex biochemical reactions has revealed symmetric patterns (see picture) similar to the mandalas presented by C.G.Jung in his book "Mandala Symbolism" [1].
This theory has also been shown to possess the ability to generate complex oscillations, that may be used for mathematical modeling of EEG and ECG and of living systems dynamics in general [4,5].
According to the results obtained, when the human brain is generating mandalas, it can be regarded as a complex "biochemical reactor" that creates different images reflecting its internal state (or the distribution of chemicals and their biochemical interactions) and all these processes based on the laws of nature.

References

1. C.G. Jung. Mandala Symbolism, Princeton University Press, 1973
2. V. Gontar, New Theoretical Approach of Physico-Chemical Reactions Dynamics with Chaotic Behavior. Chaos in Chemistry and Biochemistry, Edited by R.J.Field and L. Gyorgyi, World Scientific, 1993
3. V.Gontar, Theoretical Foundation for the Discrete Dynamics of Physicochemical Systems: Chaos, Self-Organisation, Time and Space in Complex Systems ,Discrete Dynamics in Nature and Society, 1997, Vol.1, No.1, 31-43
4. V.Gontar, Discrete Dynamics for Mathematical Simulation of Living Systems, Chaos, Solitons & Fractals, 1997, Vol. 8, No.4,517-523
5. V.Gontar, M.Gutman, I.Ovshisher and I.Eruchimovitch, ECG Simulation Based on a New Mathematical Model of Dynamics. MATHMOD, Vienna, Austria,1994.