REFLEXIVITY AND EIGENFORM: THE SHAPE OF PROCESS

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In the creation of spaces of conversation for human beings, we partake of a reflexivity of action and apparent object, where it is seen that every local manifestation of process, every seemingly fixed entity in a moving world is an indicator of global transformation. The local and the global intertwine in a reflexive and cybernetic unity. This talk will discuss this basic reflective theme of second order cybernetics using simple mathematical models, and this talk will raise questions of global responsibility that naturally arise from these considerations.

Professor Kauffman was the President of the American Society for Cybernetics (1997-1998). He is the 1993 recipient of the Warren McCulloch award of the American Society for Cybernetics. He is the founding editor and one of the managing editors of the *Journal of Knot Theory and its Ramifications*, and editor of the *World Scientific Book Series OnKnots and Everything*. He writes a column entitled Virtual Logic for the journal *Cybernetics and Human Knowing*." his "interests are in cybernetics, topology (knot theory and its ramifications) and foundations of mathematics and physics. His work is primarily in knot theory and connections with statistical mechanics, quantum theory, algebra, combinatorics and foundations. These fields include representation and exploration of topology, fractals and recursions using computers, logical and diagrammatic algebras, Hopf algebras, relations of topology with statistical mechanics and quantum field theory, foundations of discrete physics, quantum computing. In topology he introduced and developed the bracket polynomial and Kauffman polynomial."

He has worked at many places as a visiting professor and researcher, including the University of Zaragoza in Spain, the University of Iowa in Iowa City, the Institute Hautes Etudes Scientifiques in Bures Sur Yevette, France, the Institute Henri Poincaré in Paris, France, the Univesidad de Pernambuco in Recife, Brasil, and the Newton Institute in Cambridge England.

Professor Kauffman has been a prominent leader in Knot Theory, one of the most active research areas in mathematics today. His discoveries include a state sum model for the Alexander-Conway Polynomial, the bracket state sum model for the Jones polynomial, the Kauffman polyomial and Virtual Knot Theory.

He is author of several monographs on knot theory and mathematical physics. His publication list numbers over 170. Among his books are the followings:

- 1987, On Knots, Princeton University Press 498 pp.
- 1993, Quantum Topology (Series on Knots & Everything), with Randy A. Baadhio, World Scientific Pub Co Inc, 394 pp
- 1994, Temperley-Lieb Recoupling Theory and Invariants of 3-Manifolds, with Sostenes Lins, Princeton University Press, 312 pp

- 1995, Knots and Applications (Series on Knots and Everything, Vol 6)
- 1995, The Interface of Knots and Physics: American Mathematical Society Short Course January 2-3, 1995 San Francisco, California (Proceedings of Symposia in Applied Mathematics), with the American Mathematical Society
- 1998, Knots at Hellas 98: Proceedings of the International Conference on Knot Theory and Its Ramifications, with Cameron Gordon, Vaughan F. R. Jones and Sofia Lambropoulou
- 1999, Ideal Knots, with Andrzej Stasiak and Vsevolod Katritch, World Scientific Publishing Company, 414 pp.
- 2001, Knots and Physics (Series on Knots and Everything, Vol. 1), World Scientific Publishing Company, 788 pp.
- 2002, Hypercomplex Iterations: Distance Estimation and Higher Dimensional Fractals (Series on Knots and Everything , Vol 17), with Yumei Dang and Daniel Sandin.
- 2006, Formal Knot Theory, Dover Publications, 272 pp.
- 2007, Intelligence of Low Dimensional Topology 2006, with J. Scott Carter and Seiichi Kamada.