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AAAS NCARB

**HDS complex systems design science**

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SUMMARY

Writing and fundamental research on scientific methods for understanding change in natural systems, a common foundation for the sciences through their common subject; sustainability research and design services.

EDUCATION

1964-68 **B.S. physics, math:** St. Lawrence University, projects in how experiments misbehave, minors in economics, fine art, athletics

1968-70 **Post Grad Study:** Stony Brook U. - Gödel's Incompleteness theorem; Columbia U. - topology; Columbia U. - Architecture

1971-73 **Masters in Architecture & Landscape:** University of Pennsylvania - theses in sustainable design and micro climate

INDEPENDENT STUDY

**MICRO CLIMATE EVOLUTION 1976-79**

Immersion in observing hourly re-evolution of air current networks of indoor climates. Assembled mobile climate lab for detailed 24 hr records of energy flows in buildings.

**APPROPRIATE SYSTEMS TECHNOLOGY 1978-79**

Design of solar collector delaying the onset of turbulence for a clean separation of hot air currents.

**GENERAL THEORY OF COMPLEX OPEN SYSTEMS 1979 -**

A scientific method for reconstructing developmental narratives for complex system changes in form; an "unhidden pattern of events"  $\dots \cdot \hat{\cdot} \cdot \dots$ , studying of the cellular "hubs and hives" structure of living networks and other "cybernetic body parts"; using gaps in models to point beyond theory to what systems are doing

**ECONOMIC WHOLE SYSTEMS THEORY 1983 -**

A whole system model for money choices embedded in a physical market system allowing physics theorems for growth in relation to learning response-time limits for people responding to environmental signals.

**DERIVATIVE RECONSTRUCTION 1986 -**

Mathematical methods for reading the emergence of systemic change and markers for finding the mechanisms involved. A general law of continuity derived from the conservation of energy, identifying the specific forms of complexity required to start or complete developmental processes.

**PALEONTOLOGY: PUNCTUATED EQUILIBRIUM 1994 - 2006**

Using new mathematical tests for systemicity identified dynamic systems in the evolutionary speciation event of a plankton, demonstrating clear repeated systemization and collapse in a punctuated evolutionary change.

**CRIMINOLOGY: NATURAL SOCIAL SYSTEM COLLAPSE 2005-6**

Study of the great American crime wave of the 1960-2000 period, and for New York City a distinct process of collapse in its crime culture in 1990

**IRREVERSIBLE SYSTEMS AND SIGNALS OF CHANGE, 2005 -**

Developed various whole system metrics for more accurate reading of environmental signals of change, partnership methods for environmental learning & problem solving, looking beyond the problem to find complementary environmental solutions and understand the total effect.