

# Jessie Lydia P Henshaw – CV

(pen name PF Henshaw)

Scientist: AAAS, ORC, NCARB to 2012

## HDS complex natural systems design science

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## SUMMARY

Having been taught how to closely observe natural designs, processes and relationships formed an organic physics viewpoint when very young and provided a foundation. Early experiments and studies of how energy and organization combine in the dynamic emergence of natural systems set the course for many years of developing new methods for studying natural systems of all kinds. Solidifying the perspective of systems as how nature works by itself, rather than by our rules of prediction took a lot of time, as it ran into opposition nearly everywhere. Recent writing shows useful achievement in framing a dual paradigm of explanation and engagement with nature.

## EDUCATION

**1960-64 HAMILTON H.S.** – Hamilton NY – AP Math, Sports, Music, Drama

**1964-68 B.S. PHYSICS & MATH:** Al Rhomer, Don Peckham dept. heads, St. Lawrence University, physics studies of how experiments are unrepeatable, Concentrations in Math, Russian studies & fine art; Active in sports

**1968 GRADUATE STUDY:** Stony Brook U. - Gödel's Incompleteness Theorem

**1969-70 GRADUATE STUDY:** Columbia U. - Topology; Architectural Design

**1971-74 Masters in Architecture & Environmental Design:** the University of Pa GSFA, main influence: school luminaries Lou Kahn & Ian McHarg, structural design Prof. Peter McCleary; Sustainable Design thesis, Minor concentration in Landscape w/ thesis on microclimates.

## HONORS

### **1973 – MEDAL FOR BUILDING TECHNOLOGY**

Univ Pa. School of Architecture –class award, for innovative inquiry and experiment in building structure and environmental systems

### **2009 – BEST ENERGY PAPER OF THE YEAR**

American Society of Mechanical Engineers – for a combined “top-down” and “bottom-up” method of “energy accounting (paper 2010-2)

### **2024 – LINKEDIN – 500+ CONNECTIONS 900+ FOLLOWERS**

<https://www.linkedin.com/in/jessilydia-henshawactivity/>

## INDEPENDENT STUDY

### • **FIELD STUDY: MICROCLIMATE EVOLUTION IN HOUSES 1977-79**

Field documentation of passive energy transport in several houses in South West using a mobile climate lab for detailed 24-hour records and careful study of naturally evolving air current forms and pathways

### • **SOLAR BUILDING SYSTEMS AND PUBLICATION**

Study of double shell buildings, articles in Rain Magazine, a journal of appropriate technology, on a systems approach to design with climate.

### **BIOMIMICRY: CONVECTOR DESIGN MIMICKING EMERGENT STREAM FLOW**

**1978-79** Design of solar collector using self-organizing convection to delay the onset of turbulence separation of hot air currents & principles to apply.

### **SYSTEMS SCIENCE: “UNHIDDEN PATTERN OF EVENTS” 1979--**

An observation on naturally occurring whole systems (paper 1979-1), a general scientific theory and method of investigating the life cycles of natural systems; to identify, retrace and reconstruct their developmental narratives, following the continuities of their energy use to find and fill in the blanks.

## **ECONOMICS: NATURAL ECONOMIC WHOLE SYSTEMS 1983--**

Economic growth systems and their natural limits: [General Allocation Theory \(paper 1983-1\)](#) limits of money for managing accumulative investments in physical market systems, and framework for physics theorems relating to natural limits to resource and adaptive learning costs and related environmental signals.

## **ANALYSIS: DERIVATIVE RECONSTRUCTION - 1989--**

Mathematical methods for reconstructing records of systemic change and defining markers for the mechanisms involved. Development of a software platform for use in studying developmental processes. ([book paper 1999-1](#)). Extensive collection of applications and studies [/drwork.htm](#)

## **PHYSICS: THE LAWS OF CONTINUITY 1992--**

The theory underlying observed continuity of developmental processes, derived from the conservation of energy, identifies the specific forms and succession of complex self-organization processes to start or complete complex system energy uses. ([Original research letter 1995](#), [2010 current presentation of the theorem](#) )

## **PALEONTOLOGY: PUNCTUATED EQUILIBRIUM 1994 – 2007**

Highly effective mathematical tests for separating continuity and noise in time series records. It serves to identify organized processes in the evolutionary transitions such as from a simple to a complex form of plankton, finding repeated emergent systems and their collapse, as driving a punctuated evolutionary change. ([research paper 2007](#))

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

Study of the very distinct collapse of New York's high crime drug cultures beginning in 1990, finding what became fragile, and what appeared to break it. ([Research notes and images](#))

### **• CULTURAL SYSTEMS: CELLS OF CHANGING WORD USE 2008--**

Using historical records of word use from sources like the NY Times and Google, methods for identifying emergent systemic changes in cultural and human perception of life's and economic environment changes, often of separate tracks.

### **• SYSTEMIC MEASURES & INDICATORS 2005--**

Developed various whole system metrics for accurate reading of environmental signals, exposing major errors in the units of measure being used for sustainability (papers 2010-1, 2011-1, 2, 3 and 2012-1)

### **• "ACTION LEARNING" FOR ENVIRONMENTAL INTERVENTION 2005--**

- A "4D sustainability method for developing design intent engaging the environment, for "working with nature,"
- Studied partnership methods for environmental learning & problem solving
- Application to "the Commons Approach" as a community-based method of working with nature and developing "Sustainable Development Goals."

### **• BARRIERS BETWEEN KNOWLEDGE SYSTEMS 2008--2014**

- Watching the emergence of new knowledge systems, with an ever more constant focus on the cellular organization as "silos" making communication seem incompatible, while people frequently switch from the view of one to another they know too.
- Studying the relation between mental models and perceptions of systems organized and behaving from the inside vs. interacting in their environments of external forces.
- Consciousness as a static biological "reference universe" lacking a process view of the natural world

- **“PATTERN LANGUAGE” FOR NATURALLY OCCURRING DESIGNS 2015**

- Papers for 2015 PURPLSOC & PLoP meetings on “Elements” and “Mining Living Quality,” expanding on the research and practice of on Alexander’s pattern language and its wide application to software development.

- **CULTURES AS SILO ORGANISMS OF ACCUMULATING KNOWLEDGE**

A long series of studies from “What wandering minds want to know” to “Systems thinking for Systems making”, stemming from reading W. Elsasser, R. Rosen and others.

## PUBLICATION

online: [jlhpublishing.com](http://jlhpublishing.com)

**2023 1** [Emergent Growth of System Self-Organization & Self-Control: Contextual system design, steering, and transformation.](#) *Systems Research and Behavioral Science*. & *Cornell physics arxiv preprint*: <https://arxiv.org/abs/2305.09837>

**2022** [Holistic Natural Systems - Design & Steering: Guiding New Science for Transformation.](#) *Journal of the International Society for the Systems Sciences* July 2022

**2021** [Understanding Nature’s Purpose in Starting all New Lives with Compound Growth: New Science for Individual Systems](#) *Journal of the International Society for the Systems Sciences* July 2021. + [Supplemental Topics](#), [Jul 11 Slide Set](#), and [Oct 2 Slide Set](#) with Videos of [Jul 11 Talk](#), and [Oct 2 Talk](#)

**2019-2** [Growth Constant Fingerprints of Economically Driven Climate Change](#): From 1780 origin to post-WWII great acceleration. **2nd submission preprint.**

**2019-1** [Guiding patterns of naturally occurring design: A general pattern-language approach to understanding nature; Elements and Mining Living Quality.](#) *Scholars' Press*. ISBN 978-613-8-83895-1.

**2018** [Systems-thinking for Systems-making: Joining systems thought and action.](#) in *Systemic Practice and Action Research*, DOI: 10.1007/s11213-018-9450-2, [Author's PDF](#)

**2015** Henshaw, J., Guiding Patterns of Naturally Occurring Design: Elements. [PURPLSOC 2015 proceedings](#), July 3-5 2015 Krems, Austria. ISBN 9-646-73066; online Author's PDF, Reference Directory

**2011** [System Energy Assessment \(SEA\), Defining EROI for Energy Businesses as Whole Systems.](#) in Special Issue of Sustainability (MDPI) on EROI; in Sustainability (MDPI) see: Slides & notes; pre-publication archive arXiv:1104.3570v1

**2010-3** [Models Learning Change](#) - physics for adapting theory to changing realities of complex systems - for Cosmos & History pdf copy

**2010-2** [Defining A Standard Measure For Whole System EROI Combining Economic “Top-Down” And LCA “Bottom-Up” ACCOUNTING EROI for Wind farms - whole system 'Bottom-up' and 'Top-down' Accounting methods - for ASME-ES – Best Paper of the Year Award \(published as 2011-1\)](#)

**2010-1** [Complex Systems](#) - History & open Issues the complex systems sciences - in the [Encyclopedia of the Earth](#),

**2009** [Models Learning Change](#) - adapting models to the natural world of complex systems, Cosmos & History V6 #1, 2010

**2008** [Life's Hidden Resources for Learning](#), Cosmos & History Nov 2008 issue on "What is Life"

**2007** [Flowing processes in a punctuated speciation, displaying feedback driven evolution in \*G. pleisotumida\* to \*G. tumida\*](#), Abstract & Intro – pending submission 12

**1999** [Features of derivative continuity in shape](#), International Journal of Pattern Recognition and Artificial Intelligence (IJPRAI link to article), for a special issue on invariants in pattern recognition, V13 No 8 1999 1181-1199 - **2000** (republished) in Marcos Rodrigues ed., Invariants for Pattern Recognition and Classification, World Scientific, 2000, Chapter 6

**1985-2** [Unconditional Positive feedback in the economic system](#), Proceedings, Society for General Systems Research, Louisville KY

**1985-1** [Directed Opportunity, Directed Impetus: New tools for investigating autonomous causation](#), Proceedings, Society for General Systems Research, Louisville KY

**1979-1** *An Unhidden Pattern of Events* – a limited edition book of essays.  
- [Front Covers & Table of Contents](#), [Foreword](#), [An Unhidden Pattern of Events](#), Two Magical Farmers, Taking hold of Things to Come, An Appropriate Approach for Appropriate Technology, What Makes a Net Working, On Finding the Knack, [The Infinite Society - growth induced collapse](#),  
- Natural Building Climate: W.I.S.P., Multi-Climate Building, Stage Sets for Personal Climate, Sneaky Invisible Things, Natural Orders of Convection, Building Climate Pathways, House Stories I, Back Cover-Wild Garden of the Mind <http://www.synapse9.com/HouseStories.pdf>

**1978-2** [Natural Orders in Convection](#), a primer for understanding the universal behaviors of change. *Int'l Soc. for Solar Energy Research*

**1978-1** [Air Current Networks](#), Rain Magazine, Portland; Int'l Soc. for Solar Energy Research

## RESEARCH LETTERS

Online: [/signals](#)

**2014** A [World SDG](#) – proposed information system to enable a world to respond to the common interest, and make a good home on earth.

**2013** [Proposed Post2015 Commons approach for the UN](#) – co-author, with Commons Action for the UN

**2012** [Shining Light on "Dark Energy": Measuring the total impacts of Business"](#)- In "SB New Metrics of Sustainability," on SEA method implication

**2011-2** [A decisive moment for Investing in Sustainability](#) as we hit the resource limits of the earth, Apr New European Economy

**2011-1** [The curious use of Stimulus for Constraint](#) - promoting growth to prevent resource depletion - in revisions for pending issue of E:CO

**2010** [The Energy Physics of Continuity in Change](#) - accumulated notes and 1995 physics theorem

**2009-2** [Why Efficiency Multiplies Consumption](#) - presented for BioPhysical Economics Oct 2009

**2009-1** [TEA - Total Environmental Assessment](#) - prepared for ACLCA Oct 2009 PowerPoint

**1995**, [Reconstructing the Physical Continuity of Events](#), a) collection of software tools for studying the flows of organizational change in time-series data b) theorem on deriving the continuity of change from conservation laws

**1983** [General Allocation Theory](#), a whole system model of money as information on requests for services.

**1977-1** [House Stories I](#) - The daily evolutions of micro-climates inside homes