PROSE-GRAPHICS OUTLINE OF A SCIENCE OF COMPLEXITY

© John N. Warfield, 1999
All Rights Reserved
jnwarfield@aol.com

The author intends to write a book titled “A Science of Complexity: Structure-Based School” in 1999-2000, and expects that the condensed patterns shown herein will be the basis for the book.
SEVEN MILESTONES
IN THE HISTORY OF THOUGHT

1. Circa 350 B. C.
   - Aristotle’s Syllogism and Categories

2. Circa 1100 A. D.
   - Abélard’s Inference Propositions

3. Circa 1700 A. D.
   - Leibniz’s Use of Graphics of Inference

4. 1847 A. D.
   - De Morgan’s Theory of Relations and Boole’s Algebra of Propositions

5. Circa 1890 A. D.
   - C. S. Peirce’s Philosophy of Science and its Relation to Logic

6. Circa 1965 A. D.
   - Harary’s Integration of Logic, Matrices, and Digraphs

7. Circa 1974 A. D.
   - Development of the Process of Interpretive Structural Modeling
Type 2 Problematique for "Problem-Solving" Groups—© John N. Warfield, January, 1999
(Based on Benjamin Broome's Type 1 Problematique) cel001
<table>
<thead>
<tr>
<th>Infrastructure of the Science</th>
<th>Science of Complexity</th>
<th>Applications of the Science</th>
<th>Site of the Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human Being</td>
<td>Chronologies</td>
<td>DISCOVERY:</td>
<td>Organization</td>
</tr>
<tr>
<td>Language</td>
<td>Definitions</td>
<td>Description Diagnosis</td>
<td>Situation Room</td>
</tr>
<tr>
<td>Reasoning Through Relationships</td>
<td>Empirical Evidence</td>
<td>RESOLUTION:</td>
<td>Observatory</td>
</tr>
<tr>
<td>Thought Leaders</td>
<td>Laws</td>
<td>Design Implementation</td>
<td></td>
</tr>
<tr>
<td>Formalisms</td>
<td>Metrics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Empirical Data and Archival Information Sources</td>
<td>The components above make up The &quot;Work Program of Complexity&quot; (WPOC)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**EMPHASIZING THE FOUR AREAS OF THE DOMAIN OF COMPLEXITY SCIENCE (DOCS) AND THEIR PRINCIPAL COMPONENTS**

© John N. Warfield, January, 1999  Cel004
COMPONENTS OF THE DOMAIN OF COMPLEXITY SCIENCE

As the arrows are intended to portray, the Science of Complexity is strongly dependent on the Infrastructure of the Science for its quality and its continuing development. Applications of the Science depend, for their quality, both upon the Science of Complexity itself and the Infrastructure of the Organization in which the applications are being carried out.

Other drawings show the details of the four components of the Domain of Complexity Science shown above.
COMPONENTS OF THE INFRASTRUCTURE OF A STRUCTURE-BASED SCIENCE OF COMPLEXITY

Infrastructure of the Science

The Human  Language  Relational Reasoning  Thought Leaders  Formalisms  Data and Archives

The six key components that are needed in order to comprise the Infrastructure of a Science of Complexity (or any science) are shown above. The Human creates the science, and the science incorporates what is known about the human in order that the human's attributes can be accounted for in the science. Language is the medium in which the science is expressed and, if poorly chosen, pollutes the literature. Relational Reasoning forms the core of the science. Thought Leaders point the way, the Tao. Formalisms provide the foundations for enhancing in-depth communication. Data and Archives enable selections to be made that are relevant to a particular science.

© John N. Warfield, 1999  cel017
The five key components that are needed in order to comprise a Science of Complexity are shown above. Chronologies are needed to enable the history of the evolution to be studied as a way to help assess validity and to determine what needs to be done to enhance it. Definitions basically form the axiomatic base that is required to support any science. Laws and Metrics add depth and significance to the science, and Empirical Evidence allows it to undergo constant validation and extension or revision, as required. People who wish to apply any science are entitled to be told where to find these five components for that science.

© John N. Warfield, 1999   Cel016
COMPONENTS OF THE SCIENCE OF COMPLEXITY

The Science of Complexity  
(Structure-Based)

- Chronologies  
- Definitions  
- Empirical Evidence  
- Laws  
- Metrics

The five key components that are needed in order to comprise a Science of Complexity are shown above. Chronologies are needed to enable the history of the evolution to be studied as a way to help assess validity and to determine what needs to be done to enhance it. Definitions basically form the axiomatic base that is required to support any science. Laws and Metrics add depth and significance to the science, and Empirical Evidence allows it to undergo constant validation and extension or revision, as required. People who wish to apply any science are entitled to be told where to find these five components for that science.
The Work Program of Complexity is carried out using a system of management designed especially to help organizations work with complexity. This thoroughly-documented system, having stood the test of many applications over an 18-year period, is called "Interactive Management" (IM). It has been designed to overcome the difficulties uncovered in developing the Structure-Based Science of Complexity.
The four key components of the Infrastructure of the Organization that are needed in order to apply the Science of Complexity effectively are shown above. Chief Executive Support is needed to enable the work to proceed across institutional boundaries (both horizontal and vertical). The IM Process Leaders are needed to provide continuity within the organization and to serve whatever legitimate needs arise. (They may or may not carry out the IM Workshops, which could be contracted out.) The Situation Room is needed to enable effective group work to be done, and to make the IM work efficient, saving of group resources. The Organization Observatorium portrays for an adequate period of time the products of IM Work for all learners.

© John N. Warfield, 1999  Cel015
THE FATE OF AN INNOVATION

- In the first it is ridiculed;

- in the second, it is resisted;

- in the third, it is considered self-evident.

----Arthur Schopenhauer (1788-1860)