Holism and Human History

Martin Zwick
Portland State University, zwick@pdx.edu

Follow this and additional works at: https://pdxscholar.library.pdx.edu/systems_science_seminar_series

Part of the History Commons, and the Theory, Knowledge and Science Commons

Let us know how access to this document benefits you.

Recommended Citation

This Book is brought to you for free and open access. It has been accepted for inclusion in Systems Science Friday Noon Seminar Series by an authorized administrator of PDXScholar. For more information, please contact pdxscholar@pdx.edu.
Abstract

This paper uses a systems-theoretic model to structure an account of human history. According to the model, a process, after its beginning & early development, often reaches a critical stage where it encounters some limitation. If the limitation is overcome, development does not face a comparable challenge until a second critical juncture is reached, where obstacles to further advance are more severe. At the first juncture, continued development requires some complexity-managing innovation; at the second, it needs some event of systemic integration in which the old organizing principle of the process is replaced by a new principle. Overcoming the first blockage sometimes occurs via a secondary process that augments & blends with the primary process, & is subject in turn to its own developmental difficulties.
Abstract

This secondary process also eventually stalled, but in the West, the impasse was overcome by a 'tertiary' process: the emergence of humanism & secularism & - quintessentially - the development of science & technology. This third process blended with the first two in societal & religious change that ushered in what we call 'modernity.' Today, this third current of development also falters, & inter-civilizational tension afflicts the secondary stream. Much more seriously, the primary process has reached its second & critically hazardous juncture - the current global environmental-ecological crisis. System integration via a new organizing principle is needed on a planetary scale.

1.1 The challenge of universal history

- Telling story of culture (as opposed to cosmos & nature) is job of history, but historians reluctant to tell such a story. They note a distinction between 'nomothetic' - lawful - & 'ideographic' - unique & contingent, & argue that history belongs to the latter. Macrohistories, e.g., of Hegel, Marx, Spengler, Toynbee, have not been well regarded by most historians.

- No escape from macro theories of history & meta narratives. If we don't have an explicit historical model, however flawed, we default to our private mental models that are flawed more severely. If one insists on the irreducibly unique character of historical events, this in effect implies a particular historical theory, namely one in which events are random.

- Even singular events can be investigated scientifically. A theory of history need not imply that history is deterministic or that random or unique occurrences don't play an important role.

1.2 Systems theories as a resource

- This paper offers a holistic account of human history that draws on systems ideas. These ideas are used in sociology, anthropology, economics, & political science, & von Bertalanffy, one of the founders of the systems field, believed the systems field could also offer history new concepts, mathematical formalisms, & modeling methodologies.

- Paper based on previous work of author: a model of hierarchical order applied to molecular biology & linguistics & a catastrophe-theoretic interpretation of Hegelian-Marxian dialectics.

- This work draws on ideas from graph theory, nonlinear dynamics (chaos & catastrophe theories), information theory, non-equilibrium thermodynamics, etc.; also on 'systematics,' a philosophical framework (Bennett) of number & graph symbolism. Though based on mathematical ideas, model is not derived deductively. It is conceptual more than mathematical, & is heuristic & speculative.

- The model offers structures more complex than linear or cyclic patterns typically explicit or implicit in historical explanation.
Main ideas of the model

- A process is governed by some 'organizing principle' (OP).
- The OP crystallizes ('concentrates') in a system formation event.
- The process develops ('expands') in stages (potential → actual).
- Development is partially determined & partially random.
- It is shaped by internal factors & subject to external influences.
- It is especially hindered at two points of difficulty ('barriers').
- An early minor barrier limits spontaneous increase of complexity.
- A final major barrier blocks transformation to a more complex OP.
- Multiple blending processes mitigate or exacerbate difficulties.

Example

Not all levels are 'equal'.

<table>
<thead>
<tr>
<th>OP₃</th>
<th>multi-cellular organism</th>
</tr>
</thead>
<tbody>
<tr>
<td>tissues, organs, organ systems above minor barrier, developmental specification</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>OP₂</th>
<th>cell</th>
</tr>
</thead>
<tbody>
<tr>
<td>small &amp; large molecules &amp; molecular aggregates above minor barrier, genomic specification</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>OP₁</th>
<th>atom</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Sources of difficulty for development**

(a) Contingencies of transitions from stage to stage

(b) Barriers that pose special difficulties for particular transitions

(c) Tensions of differentiation & integration of multiple processes
Figure 4a. Periodization

Stages of world history (Stearns). Time scales are more logarithmic than linear: earlier stages much longer than later ones.

Stage definitions are approximate, partially arbitrary, provisional.

s8 Contemporary   ca 1914 - today
s7 Long 19th Century   ca 1750 - 1914
s6 Early Modern    ca 1450 - 1750
s5 Post-Classical   ca 500 - 1450 CE
s4 Classical period  ca 1000 BCE - 500 CE
s3 Early civilizations ca 3500 BCE - 1000 BCE
s2 Agriculture     ca 9,000 - 3500 BCE
s1 Biological emergence  ca 120,000 BCE

Figure 5. Macro-historical model: 3 processes

3 processes:

- P1 (primary) = societal development, incl. dependence on nature
- P2 (secondary) = Axial* culture (religions & philosophies)
- P3 (tertiary) = secularism, humanism, esp. science & technology

System formation events: B in Classical period, C in Early Modern Period

Materialist histories (Marx): P1 & P3
Idealist histories (Toynbee): P2 & P3

Culture here ≠ 'culture' in 'cosmos/nature/culture.'

Figure 4b. Three processes

P1 (primary) = societal development, incl. dependence on nature
P2 (secondary) = Axial* culture (religions & philosophies)
P3 (tertiary) = secularism, humanism, esp. science & technology

Figure 6. Parsons' tetrad of a social system

(a) Parsons' tetrad of social systems (links to Nature not shown)
(b) Hierarchical information & matter-energy flows
(c) Relation of Parsons' scheme to processes in model

For Marx: P1 = base, P2 = superstructure
Information above, matter-energy below.

(a) Triad of system formation events: society (P₁) affected by Axial religions (P₈, s₄), resulting in & mediated by modernity (P₁₁₁).
(b) Triad of periods of expansion after system formation:
Agricultural revolution (Agriculture); Axial spread (Post-Classical);
Industrial revolution (Long 19th Century).

1. A story of culture
2. A systems process model
3. Application to universal history
   3.1 A three process model
   3.2 A view of the past
   3.3 A view of the present
4. Summary

3.2.1 Axial transformation (1/2)

- A = primary initiating event, biological emergence of human species. Happened once (Africa), then human populations dispersed over the planet & societies formed in many locations.
- B occurred in some locations (Eurasia): societies that encountered dangers, disorders, & complexities of urban civilization (point 1), where religious-philosophical innovations of Axial period eased difficulties & allowed continued development (Jaspers, Mumford, Armstrong). Urban civilization alienated individuals from society & presented large scale threats, but new Axial definition of the person mitigated these tensions.
- "Axial period" = 6th-5th centuries BCE, e.g., Socrates, Buddha, Confucius, lao Tzu, Zoroaster, Hebrew prophets, mystics of the Upanishads. Axial traditions were religious (e.g., Hinduism, Buddhism, Taoism, Hebrew monotheism) & secular (e.g., Greek philosophy, Confucianism) forms. "Axial" here includes not only Christianity but also Islam (both later but had roots in this period).
- "The Axial Age was one of the most seminal periods of intellectual, psychological, philosophical, & religious change in recorded history; there would be nothing comparable until the Great Western Transformation, which created our own scientific & technological modernity." — Karen Armstrong
3.2.1 Axial transformation (2/2)
- For a time the union of \( P_1 \) & \( P_2 \) fostered creative development of these civilizations.
- But ultimately traditions rigidified. The Axial traditions encountered developmental difficulties (point 2), e.g., disintegration, rigidification, 
  & external vulnerability.
- Difficulties manifested in Christian Europe, in the Islamic Middle East, in Confucian (& Taoist & Buddhist) China, & in Hindu India in 
  different ways & at different times, but societies integrated by religion-based culture everywhere faced challenges to further progress.

3.2.2 Modern transformation (1/2)
- In one location, these difficulties were overcome by a third system formation event (C, Early Modern period, \( s_3 \)) – Renaissance, 
  Reformation, Enlightenment, & Scientific Revolution.
- \( P_3 \), labeled 'science' for simplicity, but includes all forces that promoted priority of reason & experience over authority & revelation.
- Just as stalling of societal complexity (\( P_1 \)) was relieved by liberating influences of the Axial traditions (\( P_2 \)), so too was stalling of 
  religion-based culture relieved – initially only in the West – by liberating influences of science & secular humanism (\( P_3 \)).
- The West, at great cost, had grasped the important truth that the union of church & state accelerates the corruption of both. Just as 
  \( P_3 \) had differentiated from \( P_1 \), \( P_3 \) now differentiated from \( P_2 \) & \( P_1 \) & 
  pried the two apart.

3.2.2 Modern transformation (2/2)
- \( P_3 \) had profound effects on \( P_1 \) & \( P_2 \). Transformation to modernity promoted development of the West & world dominance during the 
  last few hundred years. Interactions between societies became more extensive as the human web spread from Afro-Eurasia to cover the entire planet (McNeil & McNeil).
- As modernity took hold, a 'world system' (Wallerstein) formed, & global factors gained ever greater significance. Material life of 
  societies was transformed by utilization of fossil fuels. Increased flow of energy through Western societies allowed them to achieve 
  heights of wealth.
- After a successful beginning but before encountering its minor barrier, a process often enjoys a period of vigorous expansion. For 
  \( P_3 \) : the Industrial Revolution (Long 19th Century). (Figure 7(b) above.)
- Every expansion eventually encounters limitation. Today modernity \( (P_3) \) has reached its minor barrier & simultaneous with this, societal 
  development \( (P_1) \) faces its major barrier. These difficulties are exacerbated by tensions involving \( P_2 \).
3.3.1 Crises of society & of modernity (1/2)

- In societies that experienced transformation to modernity, class divisions intensified, though in response to the challenge of Marxism divisions were somewhat mitigated. Societies that didn't accomplish this transformation lagged behind & were exploited by industrialized & militarily powerful West.

- Modernity is not merely flawed by inequality. Because of technology, it now faces a crisis that is acute & fundamental, & not just societal but biospheric. Fossil fuel-based industrialization destroys the environment & causes climate change. Massive species extinctions are occurring, & planetary ecosystems are everywhere being degraded. Economies need to shift from exponential expansion to sustainable steady states.
3.3.1 Crises of society & of modernity

- Horrors of 20th century revealed dark side of modernity; tersely expressed by the year taken as start of Contemporary period: 1914. War, a constant of human history, has had its destructive power greatly amplified by technology. Senseless slaughter of WWI was followed by the devastation of WWII & the evils of totalitarianism.
- Science was distorted for ideological ends by both Nazism & Communism, both of which functioned as substitutions for religion; a third ideology, Capitalism, also supported by inadequate science & inappropriate faith, yet to evolve into a stable & rational form.
- Today, modernity is challenged & optimism in reason is a thing of the past. While a secular & humanist culture has flourished, with the undermining of religion, the coherence of Western culture was lost, & this incoherence affected everyone as the influence of the West spread across the planet.
- Modernization is differentiation, & this produces attempts at reintegration, hence resurgence of religious fundamentalism in politics & culture.
- Science itself is challenged by its own complexity, having become overspecialized.

3.3.2 Opportunities for Indigenous religions

- Religion has role to play in addressing current environmental crisis, but Axial traditions will not occupy center stage.
- Those religions that were not precursors to the Axial traditions, that were instead aligned with hunter-gatherer (S1) & agricultural (S2) phases of societal development, did not play major roles in most of human history, but have new relevance as world faces biospheric crisis of P3. Indigenous religions with their deep connections to the natural world remind us that nature is sacred & that personal & local ecological knowledge is a human possibility.
- Figure 12. Indigenous religion & ecological crisis

4. Summary

- Model more complex than structures of many historical theories: includes both lawful & contingent, different conceptions of time: lineal, cyclic, dialectical, thermodynamic, singularity; relates materialist & idealist views of human history.
- Encompasses:
  - Axial & Modern Transformations
  - Agricultural, Axial, Industrial Revolutions
  - Emergence of world system
  - Challenge of biospheric sustainability
  - Crises of modernity
  - Clash of religious civilizations
  - Conflict between science & religion
- Of course, good stories are told by story tellers, not systems theorists. But this paper offers a skeletal structure for such a story. If cast in terms of systems ideas that are very general, such a story of 'culture' could link to our stories of 'cosmos' & 'nature,' & inform us about "who we are, where we are from, where we are going, & how we should live."