Foundations of Environmental Anthropology

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Indiana University – Bloomington

Science Committee, Future Earth

SESYNC – University of Maryland
Anthropology Immersion Workshop
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The Great Global Acceleration, and its regional shifts

Figure 1. Trends from 1750 to 2010 in globally aggregated (1) Global population data according to the HYDE (History

Figure 2. Trends from 1750 to 2010 for ten of the socio-economic and international tourism) with three splits for: the OECD countries, India, China (including Macau, Hong Kong and Taiwan where applicable) and the rest of the world.

Figure 3. Trends from 1750 to 2010 in indicators for the structure and functioning of the Earth System.

Steffen et al 2015. the Anthropocene Review
Imagine the challenge of understanding Social-Ecological analysis at the ‘onset’ of the ‘Great Acceleration’ (1940-1950)
The Cultural Ecology Approach of Julian Steward (1930s-50s)

CULTURE CORE

Units of Social organization
- Labor arrangements
- Marriage patterns
- Settlement and territorial arrangements...

SUBSISTENCE TECHNOLOGY

- Resource use technology
- Productions techniques
- Diversification and specialization

ENVIRONMENTAL CONSTRAINTS

- Availability
- Spatial distribution
- Seasonality
- Limiting factors...

(1955)
STEWARD’S APPROACH: MULTI-LINEAR EVOLUTION:

certain basic types/features of culture may develop in similar ways under similar conditions, but not necessarily in regular sequence.

cross-cultural regularities may be observed;

a perspective that allows questions that are synchronic and diachronic.
GENERAL METHODOLOGY:
1. Describe and analyze the relationship between productive technology and the environment/resources

2. Describe and analyze behavioral patterns involved in the exploitation of environment and resources

3. Analyze how behavioral patterns important to exploit the environment/resources related and affect other aspects of culture

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...
THE CULTURAL ECOLOGY APPROACH

1- Focus on selected features of culture and the environment [not on totality]

2- Based on the definition of the PROBLEM of study

3- The problem of study will help DEFINE the selection of DIAGNOSTIC FEATURES

4- the diagnostic features are presumed to have some FUNCTIONAL INTER-RELATIONSHIPS

5- Focus on understanding the CAUSALITY of inter-related features

6- Consider the reconstruction of HISTORICAL changes

7- Understand the connections of LEVELS OF SOCIAL integration TECHNOLOGY and TECHNIQUES to be overcome.
Applying Cultural Ecology to Complex Societies

The Peoples of Puerto Rico Project (~1952-57)

Levels of Social Integration

Team work: Case studies w/ comparative framework

Studying farming systems, economic sectors, and the elite

SIDNEY W. MINTZ
1922-2015

Environmental Determinism

Historical possibilism

Culture Area

Cultural Ecology

Ecological Anthropology

ecosystem approach
The Ecosystems turn: Ecological Anthropology emerges

Ecosystem approach

Systems Theory

Feedback mechanisms

Adaptation and adjustment
• Vayda and Rappaport (1968)
• Ecology rather than cultural Ecology
• Avoid anthropology isolation from general ecology
• Develop a single science of ecology that applies to humans
• Culture as animal behavior – adaptive
• Behavior and genetics interdependent – towards a more unified approach – behavior as selective as biology

• Need agreements on units of analysis: individual, populations, communities, ecosystems

• Relations should be hypothesized
• More detailed lists of demographic and environmental variables
• Requires interdisciplinary collaborations
• Pay more attention to trade-offs in adaptive and non-adaptive behavior
Ecological Anthropology

1. **Human communities are ecological communities** through which energy flows and by which population/resource relationships are regulated.

2. **Systems:** (Bateson 1972) “any unit containing feedback structure and therefore competent to process information.”

3. **Ecosystems:** assemblage of living and non-living organisms and their inter-relations. As units of analysis can be defined according to the problem, broadly or narrowly.

4. **Ecosystem structure:** Energy, matter, information

5. **Homeostasis:** from maintenance of systems state of equilibrium (Odum 1971) to maintenance of systems property (similar to resilience)

6. **Adaptive strategies:** conscious or unconscious, explicit or implicit plans of action carried out by a population in response to either external or internal conditions

7. **Constraints and Stresses; adjusting versus adapting to the source of stress**
Energy Flow Symbols
(H.T. Odum)

Industrialized High-Yield Agriculture

Household Energy-Flow System

Lamotrek Pacific Atol
• **B. Orlove (1981)**

• **Functionalist fallacy**: no sample of population and damage of environment – focus on equilibrium; naïve use of carrying capacity

• **Ecological reductionism** – aspects of social organization as serving one goal, but disconnected from other parts

• **Energetics**: an over emphasis on energy as the limiting factor, no attention to economy and political system

• **Local population as unit of analysis**: neglect supra-local processes and political relations

• **Time Scale**: emphasis on homeostasis disregard for longer time scales
The Marxian turn: Political Economy takes the stage

Ownership and control
Power relations
Access and tenure
Colonialism and mercantilism
World Systems and Dependency Theory
Cognitive and Linguistic Approach: Ethnosciences, Ethnobiology

THE NEW YORK ACADEMY OF SCIENCES

SECTION OF ANTHROPOLOGY

AN ETHNOECOLOGICAL APPROACH TO SHIFTING AGRICULTURE *

By Harold C. Conklin

Cognized environment
Emic perception
The sophistication of local knowledge
Universal forms of classification?

H. Concklin
1926-2016
History and Landscape approach: Historical Ecology

Human agency overcomes limiting factors
Long-time frame
Landscape as unit of analysis
Anthropogenic environments
Symbolic and feminism approach: Symbolic Ecology

<table>
<thead>
<tr>
<th>Male</th>
<th>Female</th>
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<tbody>
<tr>
<td>Creativity</td>
<td>Instinct</td>
</tr>
<tr>
<td>Man-made</td>
<td>Innate</td>
</tr>
<tr>
<td>Society</td>
<td>Individual</td>
</tr>
<tr>
<td>Cultural</td>
<td>Biological</td>
</tr>
<tr>
<td>Cultivated</td>
<td>Savage</td>
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</tbody>
</table>

- Male: cultivated, cultivated, male, male, male, male
- Female: n, basic nature, self-expressive, n, superficial artifice, c, other-oriented

- Culture/nature as symbols for male/female

<table>
<thead>
<tr>
<th>Doing</th>
<th>Being</th>
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<tbody>
<tr>
<td>Public</td>
<td>Domestic</td>
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<td>Cosmopolitan</td>
<td>Confined</td>
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<tr>
<td>Active</td>
<td>Passive</td>
</tr>
<tr>
<td>Subject</td>
<td>Object</td>
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- Male: object, tame, subdued, restrained, cultured
- Female: subject, powerful, violent, energetic, animal-like

Overcome culture/nature dichotomy
Beyond western forms of classifying nature
Ontologies of nature
### Historical possibilism
- **Culture Area** → Cultural Ecology
  - Neo-functionalist, ecosystem approach → Ecological Anthropology
  - Political economy/Marxism approach → Political Ecology

### Formative period (19/20th C. – 1930-1950)
- Cross-fertilization → ‘Environmental Anthropology’

### Specialization period (1950-1970)
- Changing units of analysis: Culture area, culture type, niche, ecosystems, individuals/households, landscapes, networks, assemblages

### 1980-1990
- New Synthesis?

### 2000s
- Institutional analysis & Common Pool Res.
Intellectual Conciliation and Conflicts

-Specialization, advances, ruptures

-Overlaps, collaborations, synergies

-R. Rappaport: “...rise and demise.”

-E. Wolf: “…a project of intellectual deforestation”

-J. Acheson: “clubs... without theoretical unit”

-Understanding complexity in human environment interaction: An arrested project

-Components without a synthesis?
Confronting Complexity
Understanding Connectivity: A bigger challenge
Narrative Devices and Analytical Tools

World Systems Theory
... “Social Life of things”

Commodity chains
Multi-sited ethnography
Actor-Network theory
Social Network Analysis
Assemblages
Tele-connections
Telecoupling

1980s ➔
The Era of Conceptual Frameworks

- Problem-Oriented
- Meta-Theoretical Tools
- Breaking dichotomies
- Interdisciplinary Collaborations
- Progressive understanding of complexity
- Hypothesis testing and qualitative explorations
<table>
<thead>
<tr>
<th>The Anthropocene debate: Opportunities, Tensions, and Disciplinary Vices</th>
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<tbody>
<tr>
<td><strong>Human Species -- Social history</strong></td>
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<td><strong>Earth System Science – Global Political Economy</strong></td>
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<td><strong>Global Responsibility –Regional inequalities</strong></td>
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<td><strong>Regional identities – Species Identity</strong></td>
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<td><strong>Technological fixes – Behavioral Change</strong></td>
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<td><strong>Path dependency -- Desirable Futures</strong></td>
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<td><strong>Eco-catastrophe -- Good Anthropocene</strong></td>
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A Cultural Ecology of the Anthropocene?

“CULTURE CORE”

SDGs 2015

COMPLEX SYSTEMS
TELECONNECTIONS
FUNCTIONAL
INTERDEPENDENCY
CONNECTIVITY
SCENARIOS

“ENVIRONMENTAL
CONSTRAINTS”

NARRATIVES
VALUES
COSMOLOGIES
BEHAVIOR
POLITICAL ECONOMY
DEPENDENCY
NEO-COLONIALISM
TELECONNECTIONS

Rockström et al 2009; Steffen et al 2015
Towards a joint project?
From differences to complementarity: New Synthesis?
A place on the table?
Thank YOU!
STEWARD’S GOAL:
-To understand EMPIRICALLY “the conditions determining phenomena of limited occurrence... no cultural phenomena is universal” (contrast to previous and concurrent explanations of culture)

-Culture change results from adaptation to local environments

-CULTURE ECOLOGY offers an heuristic device to understand the EFFECT of environment upon culture, i.e., how people organize life to acquire local resources

-Focus on LOCAL environment where a society has LATITUDE in selection ADAPTIVE responses and see adaptation is a CREATIVE process

-Understand society in terms of LEVELS OF SOCIAL INTEGRATION; cultural development can be understood in terms of increasing complexity in terms of successive levels of integration
“…Confront complexity …with thinking that is capable of unifying concepts which repel one another and are otherwise catalogued and isolated in separate compartments.”

Edgar Morin (2008)

‘We solve problems by working together!’

Elinor Ostrom
Welcome to the Anthropocene!

CITATIONS peer-reviewed: 2000 and 2015
[Brondizio et al. 2016]
KEY CONCEPTS:

1-CULTURE CORE: “Constellation of features which are most closely related to subsistence activities and economic arrangements.” = “Empirically defined features closely involved in the utilization of the environment in culturally prescribed ways.”

2-RELEVANT ENVIRONMENTAL FEATURES: The features of the environment and RESOURCES that a society/culture recognizes as important and central to their lives.

3-LIMITING FACTORS: the conditions of the environment and resources that sets a limit of utilization and that requires TECHNOLOGY and TECHNIQUES to be overcome.
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• Behavior and genetics interdependent – towards a more unified approach – behavior as selective as biology

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• **CHANGING QUESTIONS:**
• From why a cultural trait is present to how it works
• Relationship between energetics and social stratification  [ex. non-food producing elites]
• Understanding domestication and intensification
• Understanding interdependencies between social behavior, environment, and biological variability