EcoHealth–OneHealth–The Manhattan Principles: Navigating Complexity, Promoting Health

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"Ecological Integrity 25 Years On and Environmental Disasters as Crimes Against Humanity"
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DISCLOSURE

The topic of today was a special request of Laura Westra. The three people who I acknowledge were collegial in providing me with their most recent papers and presentations on the topic. Any errors in my synthesis is no fault of theirs but my own.
The intimate interdependence of human health and the ecosystems in which we are embedded is now a commonplace observation.

After over a century of focus on diseases, their biologic causes and the correction of exposures (clean water and air) and facilitation of responses (immunizations and nutrition), public health discourse shifted to embrace the concept of determinants of health as extending to social, economic and environmental realms.

This moved the discourse and science of public health into an unprecedented level of complexity just as public concern about the environment heightened.

To address multifactorial, dynamic impacts on health, a new paradigm was needed which would overcome the separation of humans and ecosystems.
EcoHealth

- Ecosystem Approaches to Health (also known as the “EcoHealth” approach) link population or community health and well-being with the environment and sustainable development.

- The approach is based on the understanding that health (good or bad) arises from inter-relationships between coupled human and natural (social-ecological) systems.

- To address multifactorial, dynamic impacts on health, a new paradigm was needed which would overcome the separation of humans and ecosystems. Ecosystem approaches to health arose in the 1990s from a rich background of intellectual ferment as Canada wrestled with diverse problems ranging from Great Lakes contamination to zoonotic diseases.

- Canada’s International Development Research Centre (IDRC) played a lead role in supporting an international community of scientists and scholars who advanced ecosystem approaches to health. These collective efforts have enabled a shift to a research paradigm that embraces transdisciplinarity, social justice, gender equity, multi-stakeholder participation and sustainability. It is a framework to study and manage relationships between human beings and the environment in pursuit of co-benefits that simultaneously improve ecosystem health and human well-being. It is an approach rooted in systems thinking/holism.
Health/Well-being and ecosystems

- Having 10 more trees in a city block improves health perception in ways comparable to:
  - an increase in annual personal income of $10,000 and moving to a neighborhood with $10,000 higher median income
  - or being 7 years younger.

An example of EcoHealth research in practice: Credit Valley Conservation [CVC] Authority in Southern Ontario, Canada

- Oriented to identifying and communicating relationships among ecosystem services and human health so as to demonstrate the importance of watershed management.
- These projects are typical of the Anthropocene, in which human systems impact the natural systems upon which they depend.
- All kinds of feedback loops are identified for this approach.
Credit River Watershed

~1,000 km² land area
~1,500 km of tributaries

Protected areas:
- Niagara Escarpment
- Oak Ridges Moraine
- Green Belt

Complications:
- Toronto urban agglomeration
- Multiple municipal jurisdictions
- Rapid urbanization
Relationships among environment and health

Surveys, Focus Groups...

Extracted from A. Belaski (2014) The Role of Conservation in Health Promotion: Investigating Mental Well-Being in the Credit River Watershed, presented at WatIF Graduate Conference, 12 May 2014, Queens University, Kinston, ON.
Governance stakeholders
Your Health & the Watershed
Natural areas such as wetlands and forests mitigate the movement of water through the landscape, protecting against floods.
The CVC browser showing physical activity and obesity information together with outside recreational facility data.
And we all have heard how the removal of mangroves has contributed to severe tsunami impacts on coastal areas ...
And the significance of the EcoHealth approach in indigenous communities exploited for their resources

- Naturally occurring contamination of a river as a source of drinking water and artisanal mining and factory production
- The EcoHealth approach brings all sources of exposure into an holistic model to explain health outcomes
- These models provide understanding of damage to health and well-being from all perspectives, incl. cultural and economic.
A Toolkit for Eco-epidemiological Enquiry Under Global Ecological Change

Collegium Ramazzini, Carpi, Italy
October 25-28, 2007

Newtonian vs. **Complexity Paradigms**

- Reductionism vs. **Holism**
- **Predictability** vs. unpredictability
- Linear vs. **non-linear**
- **Uncertainties acknowledged**
- Deterministic vs. **non-deterministic**
- System equilibrium vs. **instability**
Toolkit

- Integrated Assessment
- Integrated Scenario Analysis
- Participatory methods
- Ecological Footprint Analysis (EFA) and Disaggregated EFA
- The DPSEEA model
- Product Life-Cycle Analysis (PLCA)
- I=PAT
- Kuznets curves
Integrated Assessment (since 1996)

“A structured process of dealing with complex issues, using knowledge from various scientific disciplines and/or stakeholders, such that integrated insights are made available to decision-makers”

Rotmans, 1998
Integrated Assessment - Applied

- A systems-based perspective
- Holistic and integrated (disciplinary) approach, providing perspectives for addressing global health issues
- Greater emphasis on understanding processes (pathways) than on prediction (cause and effect)
- Interdisciplinary approach is required
- Makes explicit multiple interactions that exist between natural, economic and social systems
Participatory Methods

- Policy exercises and focus groups
- Linked to ‘post-normal science’ (Funtowicz and Ravetz, 1994)
- Involvement of relevant stakeholders
Participatory Methods - Applied

- Focus groups elicit preferences, opinions, and viewpoints
- Participatory modeling allows stakeholders to explore the implications of their ideas
- In scientist-stakeholder workshops, a research agenda can be formulated
- By stakeholders identifying key issues, a range of possible futures can be explored
- In policy exercises, participants assume different roles to simulate a decision-making process
OneHealth

In 2004, a group of strategic thinkers met in New York City and formulated 12 Manhattan Principles that called for the international community to adopt an holistic approach to combat 'threats to the health of life on Earth' under the banner 'One World, One Health', the latter being equivalent to the EcoHealth approach but called the OneHealth movement.
The Manhattan Principles

- In September, 2004 a group of strategic thinkers met in New York City and formulated 12 Manhattan Principles that called for the international community to adopt a holistic approach to combat 'threats to the health of life on earth' under the banner 'One World, One Health'.

- These “Manhattan Principles” urge world leaders, civil society, the global health community, and institutions of science to holistically approach the prevention of epidemic/epi-zoonotic disease and the maintenance of ecosystem integrity by:

  - [https://www.cdc.gov/onehealth/pdfs/manhattan/twelve_manhattan_principles.pdf](https://www.cdc.gov/onehealth/pdfs/manhattan/twelve_manhattan_principles.pdf)
1. Recognizing the link between human, domestic animal, and wildlife health, and the threat disease poses to people, their food supplies and economies, and the biodiversity essential to maintaining the healthy environments and functioning ecosystems we all require.

2. Recognizing that decisions regarding land and water use have real implications for health ...

3. Including wildlife health science as an essential component of global disease prevention, surveillance, monitoring, control, and mitigation.

4. Recognizing that human health programs can greatly contribute to conservation efforts.

5. Devising adaptive, holistic, and forward-looking approaches to the prevention, surveillance, monitoring, control, and mitigation of emerging and resurging diseases that fully account for the complex interconnections among species.

6. Seeking opportunities to fully integrate biodiversity conservation perspectives and human needs (including those related to domestic animal health) when developing solutions to infectious disease threats.
7. Reducing demand for and better regulating the international live wildlife and bushmeat trade ... to lessen risks of disease movement, cross-species transmission, and the development of novel pathogen-host relationships ... The costs of this worldwide trade in terms of impacts on public health, agriculture, and conservation are enormous ...

8. Restricting the mass culling of free-ranging wildlife species ...

9. Increasing investment in the global human and animal health infrastructure commensurate with the serious nature of emerging and resurfacing disease threats to people, domestic animals and wildlife ...

10. Forming collaborative relationships among governments, local people, and the private and public (i.e. non-profit) sectors to meet the challenges of global health and biodiversity conservation.

11. Providing adequate resources and support for global wildlife health surveillance networks that exchange disease information with the public health and agricultural animal health communities as part of early warning systems ...

12. Investing in educating and raising awareness among the world’s people and in influencing the policy process ... to better understand the relationships between health and ecosystem integrity to succeed in improving prospects for a healthier planet.
Integration of all approaches

- These approaches align nicely with The Earth Charter as well as with the mission of the Global Ecological Integrity Group (GEIG).
Distinguish between Infectious and Chronic diseases

- OneHealth has its focus on infectious/communicable diseases
- EcoHealth has its focus more on the totality of environmental determinants of health by combining both occupational, community-wide, and naturally occurring exposures of concern
- Quantitative as well as qualitative methods that are integrative and transdisciplinary; not a reductionist, but a systemic or holistic approach
Where control groups are selected from among the broader community that may in itself be exposed - albeit to low levels of contaminants - the relative differences found in case-control or cohort studies will be lower than they ought to be and thus we observe an attenuation towards the null hypothesis as a bias built into the design of the study (i.e., demonstrating less of an effect than in truth exists).
Thank you!

Questions?

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