ABSTRACT
The Integration Imperative and Cumulative Impacts: Understanding and responding to the environment, community and health impacts of changing landscapes and waterways

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Calls for integration of knowledge are not new. They reflect an ongoing and fertile tension in response to complexity: a need to disaggregate our understanding into manageable parts, and a corresponding imperative to put things back together, to address whole, interrelated systems that influence our personal, public and planetary health. This ‘integration imperative’ poses opportunities and challenges across academic disciplines, policy sectors, and knowledge cultures, as well as fueling respect and recognition for the precedents and ongoing leadership of Indigenous knowledge. The need for integrative understanding and responses becomes especially relevant when seeking to understand and respond to the cumulative determinants of health, in relation to social and ecosystem change, over space and time. For the health sector, this involves pathways of influence that extend beyond the typical purview of health, where ‘upstream’ includes places, waterways, landscapes and drivers of change, that are well outside our direct gaze or traditional spheres of influence. This presentation explores these themes in relation to a five-year international research project, based in Canada and engaged in Australia and New Zealand, known as the ECHO (Environment, Community, Health Observatory) Network. The project focuses on working together across sectors to understand and respond to the cumulative health, environment and community impacts of natural resource management. The research prioritises learning about a new generation of tools and processes that local, regional and international partners are using to “take notice for action”, as a means to respond to the integration imperative and the cumulative determinants of health impact.
The Integration Imperative & Cumulative Impacts: Understanding and responding to the environment, community and health impacts of changing landscapes and waterways

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2: Co-lead: ECHO (Environment, Community, Health Observatory) Network Canada, New Zealand, Australia

Presentation to:
One Health Aotearoa: 3rd Symposium
November 29, 2017
The Integration Imperative & Cumulative Impacts: Understanding and responding to the environment, community and health impacts of changing landscapes and waterways

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The Integration Imperative & Cumulative Impacts

Concepts
Integration of Knowledges

Doing the same things better?

Doing better things?

Confluence
Cumulative Impacts in Landscapes & Waterways

Moving From ‘hazards to ‘home’...

Capacity
‘Next-generation’ understanding and response

How to strengthen capacity for this work?

Lead? Convene? Support? Listen?
Calls for integration are not new.…

A demand for “both/and” thinking

Integrative approaches often demand working in the spaces “in between”
Calls for integration are not new....

A demand for “both/and” thinking

Integrative approaches often demand working in the spaces “in between”
A demand for “both/and” thinking

Integrative approaches often demand working in the spaces “in between”

Calls for integration are not new....
Calls for integration are not new….  


Overview of field developments
1. Occupational and Environmental Health
2. Political Ecology of Health
3. Environmental Justice
4. Ecohealth
5. One Health
6. Ecological Public Health
7. Planetary Health

A demand for “both/and” thinking

Integrative approaches often demand working in the spaces “in between”
Calls for integration are not new.... they reflect:

...an ongoing and fertile tension in response to complexity: a need to disaggregate our understanding into manageable parts...

Fig. 1 - Ecosystem-enriched DPSEEA (eDPSEEA) a conceptual framework for an integrated assessment of human and ecosystem health and ecosystem service provision.

Calls for integration are not new….

they reflect:

… a corresponding imperative to put things back together, to address whole, interrelated systems that influence our personal, public and planetary health...

**Ecosystems as settings for health (2016)**

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**Ecosystems as settings for human health and well-being.**
A broad conceptual model showing the relationship between ecological integrity, ecosystem services, and the benefits that humans derive.

Calls for integration are not new…. they reflect:

… a corresponding imperative to put things back together, to address whole, interrelated systems that influence our personal, public and planetary health...

Figure 1: The Prism Framework for Health and Sustainability (2003, 2010, 2016)

Calls for integration are not new….

A ‘cascade of effects and impacts’ (2016)
- Direct effects
- Direct impacts (as a consequence of effects)
- Indirect Impacts
- Long-term indirect (downstream) impacts over space and time

(Cumulative health impacts of changing landscapes and waterways)

Adapted from Figure 5.2. Parkes (2016) Chapter 5 in Gillingham et al. (2016). The Integration Imperative: Cumulative Environmental, Community and Health Impacts of Multiple Natural Resource Developments. Springer International Publishing AG.)
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This ‘integration imperative’ poses opportunities and challenges across academic disciplines, policy sectors, and knowledge cultures, as well as fueling respect and recognition for the precedents and ongoing leadership of Indigenous knowledge...
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A demand for “both/and” thinking

BOTH doing the same things better? AND doing better things?
The Integration Imperative & Cumulative Impacts

CONCEPTS
Integration of Knowledges
Doing the same things better?
Doing better things?

CONFLUENCE
Cumulative Impacts in Landscapes & Waterways
Moving From ‘hazards to ‘home’…

CAPACITY
‘Next-generation’ understanding and response
How to strengthen capacity for this work?
Lead? Convene? Support? Listen?
The need for integrative understanding and responses becomes especially relevant when seeking to understand and respond to the cumulative determinants of health, in relation to social and ecosystem change, over space and time...
Connecting health, ecosystems and society:
Strengthening intersectoral capacity to meet health and sustainability goals.

Where is “Health”
Connecting health, ecosystems and society: Strengthening intersectoral capacity to meet health and sustainability goals.

*Words beginning with eco origins are derived from the greek word for house (oikos) and the latin word for household (oeco)*
Cumulative Impacts and the Integration Imperative….

Ecology & ecosystems not only influence heath, but also our ways of thinking, relating and doing...

Orienting to ‘living systems’… ecosystems... Whenua... Te Tai Ao... as guides to integration

Moving from ‘hazards’ to ‘home’
Ecosystem services support the “settings” for human health and well-being

Need to acknowledge negative and positive pathways (across scales)

**Ecosystems Services provide;**
1. core contribution to personal hydration
2. core contribution to personal nutrition and microbiomes
3. sites of exposure to pollution or toxicants
4. sites of exposure to infectious diseases
5. sites of physical hazards
6. settings for psychosocial well-being
7. places where people derive their livelihoods
8. lifestyle places that enrich people’s lives, enable them to cope, and to help others
9. sites were medicinal products can be derived

*Sustain life*
*Exposures to hazards*
*Benefits of our ‘home’*

* Adapted from Horwitz & Finlayson 2011*
Catchments & Ecosystems as ‘settings’ for Health & Well-being

Cumulative Health Impacts of changing Landscapes & Waterways

Weather

Atmosphere Dynamics

Terrestrial-Marine systems (inc. estuaries) are also critical examples of land-water-health dynamics

Land & Land Use

Source: Conservation Ontario /Karen Morrison

Communities/
Governance/
Social Systems

GREEN Water

BLUE Water

CONFLUENCE

Catchment & Ecosystems as ‘settings’ for Health & Well-being

Cumulative Health Impacts of changing Landscapes & Waterways

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Catchments & Ecosystems as ‘settings’ for Health & Well-being

Cumulative Health Impacts of changing Landscapes & Waterways

District Health boards and their (catchment) boundaries

Major (river) catchments in New Zealand

http://www.health.govt.nz
Catchments & Ecosystems as ‘settings’ for Health & Well-being
Cumulative Health Impacts of changing Landscapes & Waterways

“Upstream is a place”
For the health sector, this involves **pathways of influence** that extend beyond the typical purview of health, where ‘upstream’ includes places, waterways, landscapes and drivers of change, that are well outside our direct gaze or traditional spheres of influence.
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The Integration Imperative & Cumulative Impacts

**CONCEPTS**
- Integration of Knowledges
- Doing the same things better?
- Doing better things?

**CONFLUENCE**
- Cumulative Impacts in Landscapes & Waterways
- Moving From ‘hazards to ‘home’...}

**CAPACITY**
- ‘Next-generation’ understanding and response
- How to strengthen capacity for this work?
Fostering “next generation” understanding and response

... A five-year international research project: the ECHO (Environment, Community, Health Observatory) Network.

...Working together across sectors to understand and respond to the cumulative health, environment and community impacts of natural resource management (focused on resource extraction and development).

... learning about a new generation of tools and processes that local, regional and international partners are using to “take notice for action”, as a means to respond to the integration imperative and the cumulative determinants of health impact.”
The Environment, Community, Health Observatory (ECHO) Network seeks to:

1. create and operate an Environment, Community, Health Observatory (ECHO) that strengthens intersectoral capacity to understand and respond to health impacts of resource development, and

2. use the ECHO platform to help regional programs make critical decisions on cumulative determinants of health that cannot be achieved by the health sector alone.
Réseau ECHO Network

Funded by: CIHR Environmental Health Signature Initiative: Intersectoral Prevention Research

Contacts:

- **UNBC Co-Leads:** Margot Parkes and Henry Harder
- **Northern Health ‘Knowledge User’ Lead:** Sandra Allison
- **Research Manager:** Diana.Kutzner@unbc.ca
- **60 team members:** Researchers, Research Partners, Collaborators, across Canada (+ NZ and Australia)
- **Project links /website information updated at:**
  - [https://ecohealthkta.net/health-resource-development/echo/](https://ecohealthkta.net/health-resource-development/echo/)

“Way-dell-tu-ih” (Dakelh, Carrier Territory)
**Environment, Community, Health Observatory Network**

**CAPACITY**

**KNOWLEDGE & EXPERIENCE** of the Cumulative Impacts of Resource Development
- Local Knowledge
- Secondary Data (Monitoring/Surveillance)
- Primary Research

**INTERSECTORAL ACTIONS & RESPONSES** to the Cumulative Impacts of Resource Development
- Decisions, policies, practices in specific regions, contexts, jurisdictions

**Regional Contexts/Cases (Knowledge users and Collaborators)**
- Northern Health + CIRC (Northern BC)
- First Nations Health Authority (BC)
- Battle River Watershed Alliance (AB)
- NB Environmental Network (NB)
- Future Regional Cases (in Canada; other countries)

**Principal Applicant Researchers**: BC, AB, SK, NB
**Co-Applicant Researchers**: BC, ON, QB (Canada) + NZ, Australia

**Research Collaborators**: BC, ON, NB

**Future Research Collaborations and Projects** (National and International)

**Researchers** (Applicants, Co-Applicants, Collaborators)
Réseau ECHO Network
“Way-dell-tu-ih” (Dakelh, Carrier Territory)
KNOWLEDGE & EXPERIENCE of the Cumulative Impacts of Resource Development (Local Knowledge; Secondary Data (Monitoring/Surveillance); Primary Research)

Tools and Process

Detect, Take Notice, Analyze?
Making the invisible visible through integrative approaches (tools and processes) to understand environment, community & health impacts

Take Notice

Connect

Environment-Community-Health Observatory

Be Active

Give

Keep Learning

Respond, Evaluate, Learn?
Learning together in ways that cannot be achieved by the health sector (or any sector) alone

Exchange and Learning

INTERSECTORAL ACTIONS & RESPONSES to the Cumulative Impacts of Resource Development (decisions, policies, practices in specific regions, contexts, jurisdictions)

CAPACITY

Environment, Community, Health Observatory Network
Strengthening intersectoral capacity to understand and respond to health impacts of resource development
Knowledge & Experience of the Cumulative Impacts of Resource Development

(Neighboring Knowledge; Secondary Data (Monitoring/Surveillance); Primary Research)

Principal Applicant Researchers: BC, AB, SK, NB
Co-Applicant Researchers: BC, ON, QB (Canada) + NZ, Australia

Research Collaborators: BC, ON, NB

Future Research Collaborations and Projects (National and International)

Participants (Applicants, Co-Applicants, Collaborators)
The Integrations Imperative and Cumulative Impacts: Understanding and responding to impacts in landscapes and waterways.

Exchange & Learning?

“Knowledge”
“Research”
“Scientific”
“Factual”
“Social”

“Action”
“Policy”
“Indigenous”
“Experiential”
“Ecological”

How to strengthen capacity for this work?
Lead? Convene? Support? Listen?

‘Next-generation’ understanding and response.
“Knowledge”  “Action”
“Research”    “Policy”
“Scientific”  “Indigenous”
“Factual”     “Experiential”
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Learning & Exchange?
The Integration Imperative & Cumulative Impacts

**CONCEPTS**
Integration of Knowledges

*Doing the same things better?*

*Doing better things?*

**CONFLUENCE**
Cumulative Impacts in Landscapes & Waterways

*Moving From ‘hazards to ‘home’…*

**CAPACITY**
‘Next-generation’ understanding and response

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The Integration Imperative & Cumulative Impacts:

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