

Connecting Arctic Science with Communities

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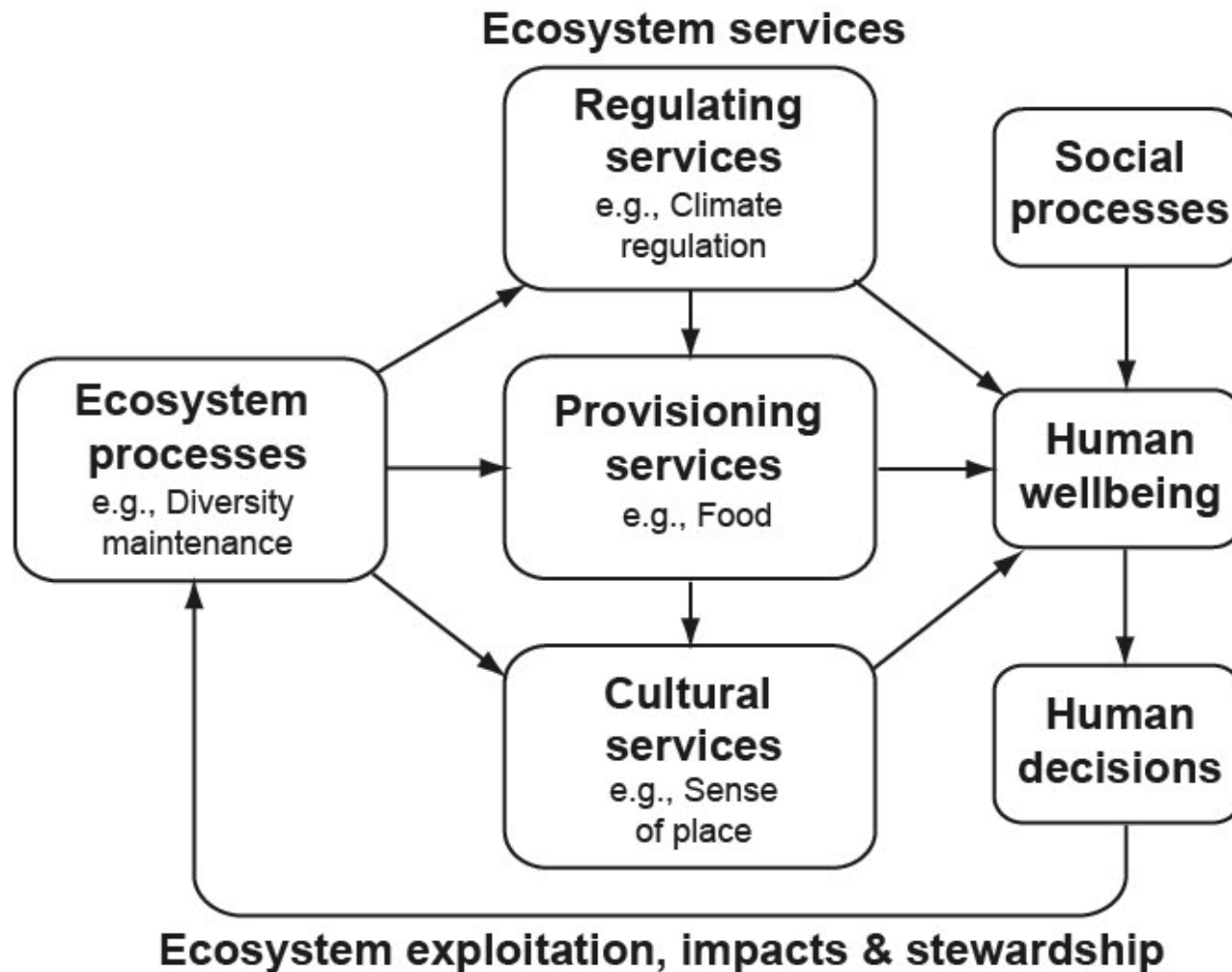
Academic scientists have responsibilities and opportunities

- We are guests of indigenous residents who have observed and experienced arctic landscapes for generations
- Differences in indigenous and academic approaches and experiences provide opportunities for new learning

Academic and community goals are synergistic

- Arctic LTER science goals
 - To understand and predict effects of environmental change on arctic landscapes
- Arctic community goals
 - To adapt and be resilient to change so that arctic residents and nature can thrive
- Together these goals constitute the key components of arctic social-ecological systems

Social-ecological system



Stewardship: A framework to integrate indigenous and western science

- Active shaping of pathways of social and ecological changes for the benefit of both people and nature
- Key features
 - Active intervention: linking knowledge to action
 - Shaping change
 - System of people as part of nature
 - Two goals: ecosystem resilience, human well-being

Indigenous science:
Elders are an archive of knowledge and wisdom.
Youth are the promise for the future



Indigenous science

- Locally grounded and therefore diverse
- Based on observations and intergenerational stories of people who live on the land
- Holistic—focused on the big picture
- People are part of nature
- Human-nature interactions are built on respect and reciprocity (feedbacks)
- There is an important spiritual dimension
 - Interaction of observations and cultural framing

Western-Indigenous differences in science

- Worldviews, wisdom, and spirituality as filters
 - Western science shies away from these
 - Indigenous science embraces them
- Criteria for importance
 - Logical consistency in western science
 - Biophysical emphasis
 - Cultural consistency in indigenous science
 - Social emphasis

My “aha” moment

- Academics typically decide
 - Who should decide what to study
 - Who should do the studies
 - Where the studies should be done
 - Who should benefit from the studies
 - Who should control research products
- Most academic-community interactions have been extractive
- How can we turn this relationship around?

Community Partnership for Self-Reliance

- **ANSC:** took the lead in engaging communities
- **Communities:** defined their own goals and the projects they wished to pursue
- **Academics:** provided technical and research expertise—if requested by communities



The process

- Identify partners
 - Communities with history of innovation
 - University research groups with relevant expertise
- Form a liaison team
 - Focus on trust-building; key role for students
 - Match community needs with research expertise
 - *In-reach* to researchers rather than *outreach*
- Iterative refinement of needs and implementation strategy

Approaches to integrating knowledge systems

- Engage with respect
 - *Dialogue*: Listen more, talk less
 - Try to understand from others' perspectives
- Focus on mutual interests and concerns
 - e.g., sustainability in a changing world
- Plan for the long term (7th generation)

Community Concerns

Core goal: Maintain strong culture through self-reliance

Shared concerns of all communities:

- High cost of energy
 - Energy-inefficient housing
 - Challenges in integrating renewable energy
- Difficulty meeting subsistence needs

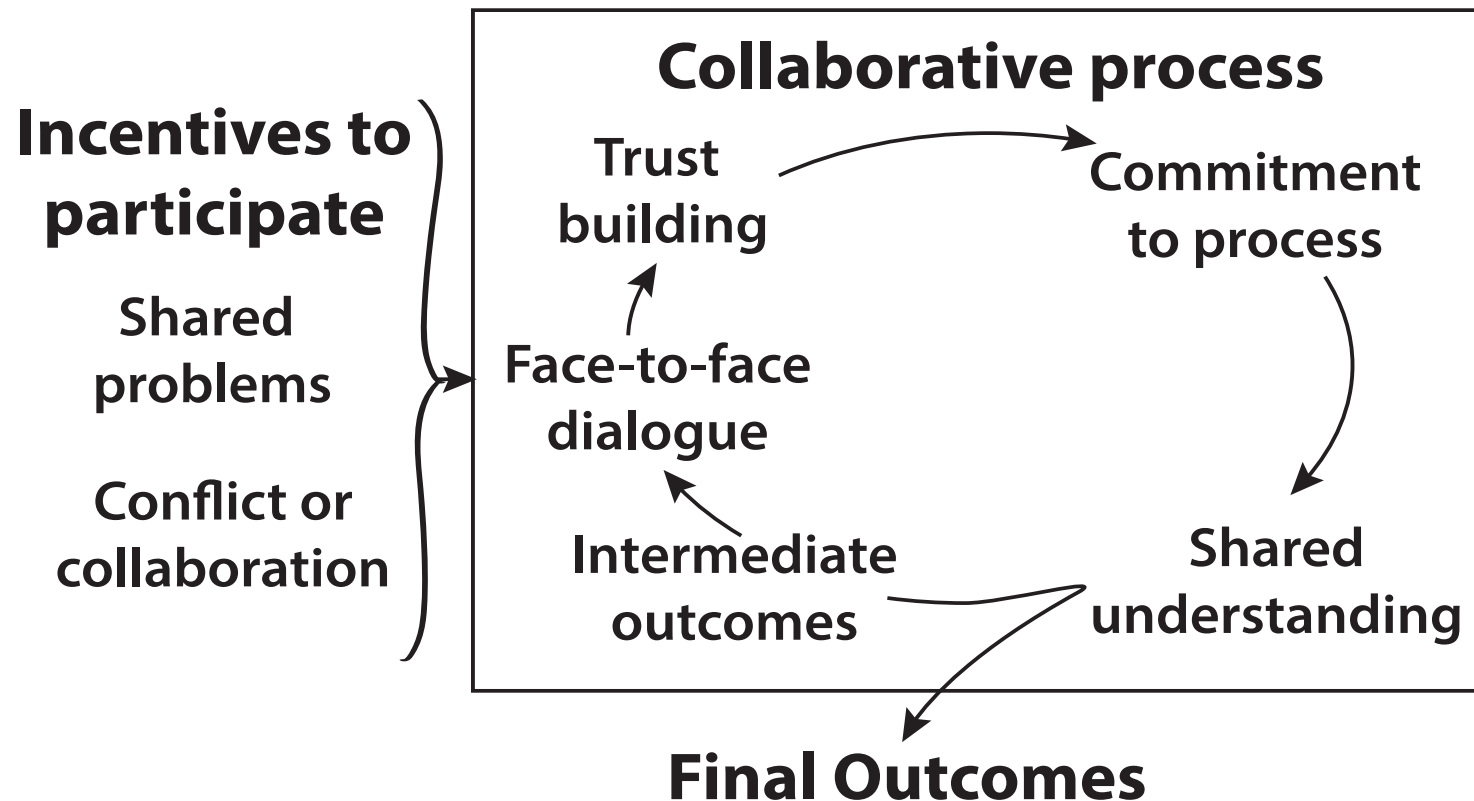
Unique concerns:

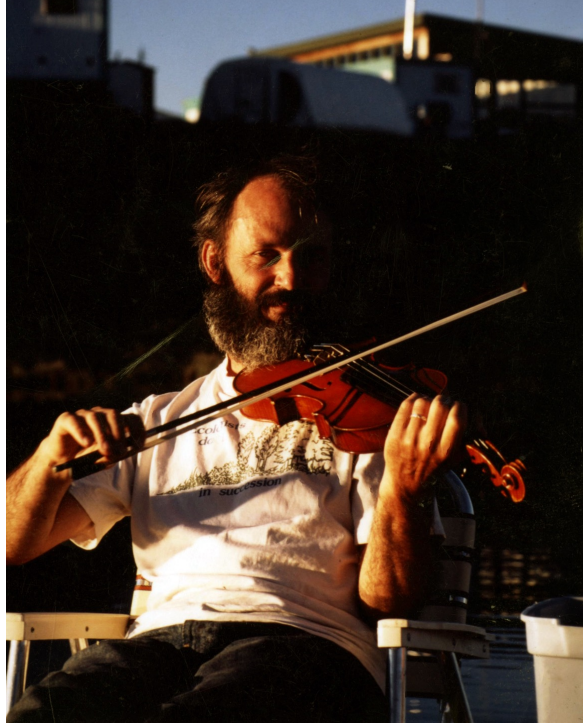
- Village relocation (Newtok)
- Protecting infrastructure from flooding (Koyukuk)
- Secure rights to clean water (Iguigig)
- Rights to fish for salmon (Nikolai)



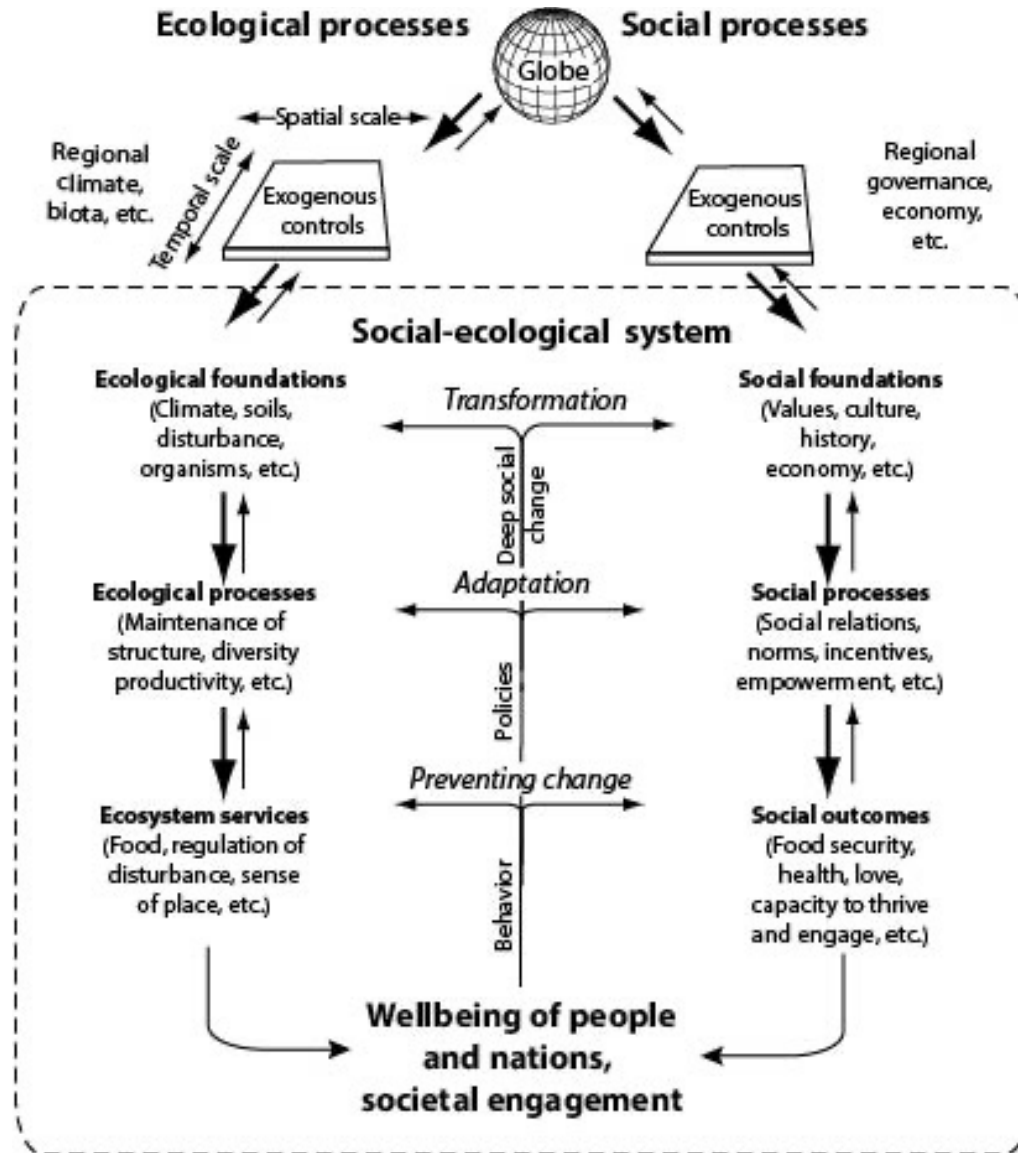
When is collaboration most useful and feasible?

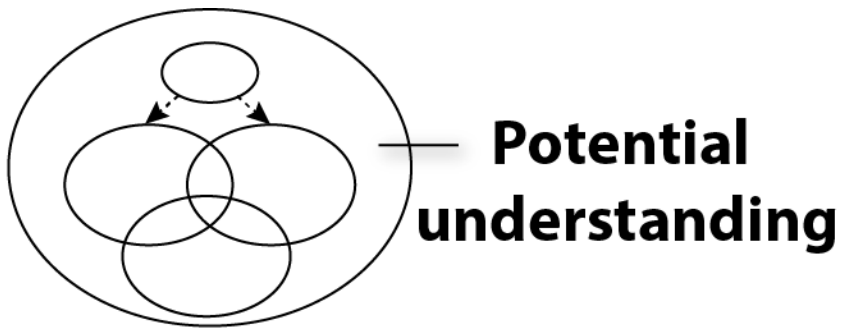
Collective Action





How can this inform global-change science?





Worldviews

Legitimate & believable

Realized understanding



Importance

Understanding that informs decisions