

# Seeing Social-Ecological Systems

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// researcher in focus //



Photo by: Frank Kovalchek

On the last afternoon of my trip to Alaska, I sped along the North Glenn Highway with two distinct feelings of urgency. First, I was anxious about reaching my destination before the low, fading February sun disappeared completely below the mountains; I still had 40 miles to go. Simultaneously, although the winter weather was bitterly frigid, the Earth's increasing average temperatures, especially here in the Arctic, added great significance to my journey. If I was going to see a glacier for the first—and maybe only—time in my life, I had to get there now, before darkness or a warmer climate melted it away.

Witnessing a glacier firsthand was added to my bucket list after I learned about their dynamics in a college geology class. The idea of glaciers as massive grinding machines with viscous “conveyor belts” of slush eroding and transporting rock fascinated me. (Diagramming this soil formation factor on the board in my soil ecology class is a highlight of the course for me!) These dynamics were, of course, not observable when I finally marveled at the Matanuska Glacier from a roadside overlook. But that didn't diminish the beauty of the soft, but nearly fluorescent, blue glow of the ice field. There is something captivating and enchanting about being in the presence of a glacier, even at twilight from a couple miles away in temperatures well below 0°C. Exhilaration and awe replaced my immediate sense of urgency; I saw a glacier!

And yet, as I began the 100 mile drive back to Anchorage, my second sense of anxiety became clearer. Naturally, having seen one glacier, I wanted to see others. Would I ever have that opportunity? What if they—the abiotic victims of a changing world—all vanish before I can get to another one? What a disappointment that would be.

As quickly as my anxiety turned to sadness, a pang of guilt stung me. Here I was contributing to the problem, alone in my rental car, its carbon dioxide emissions floating into the atmosphere (not to mention the contributions of my plane rides). My desire to see the

glacier led to actions that—albeit in a small way—contribute to its possible demise. I now clearly saw that I am part of the human-pollution-atmosphere-glacier system. And now, dynamics within that system were affecting my thoughts and emotions, forming a behavior-environmental-cognitive feedback loop. Such metaphysical, existential thoughts felt slightly disconcerting as snow started to fly through my headlights.

Actually, at that moment my mind was primed to think about human-environment interrelationships. Rather than glacier hunting, the purpose of my Alaska trip was to represent Rhode Island NSF EPSCoR at the “Living on Earth II” workshop, organized and hosted by Alaska EPSCoR. The workshop's focus was social-ecological systems (SESs), a rapidly growing area of study seeking to understand the many direct and indirect ways in which social and ecological variables interact to generate coupled social and environmental patterns and processes, from local to global scales. Just prior to my glacier visit, I heard presentations about the ecological economics of Iowa cornfields and the ethnography of Alaskan subsistence fisheries. I had stimulating discussions with an environmental sociologist from Oklahoma and a communications expert from Maine. Engaging with such an interdisciplinary group enabled us all to make valuable conceptual connections about complex issues.

Although insights from SES research have been increasing and spreading throughout the scholarly community,

they are probably not yet widely understood and appreciated by the broader public. Thus, a sub-theme of the workshop was effective communication: how do we help diverse groups “see” SESs? What framing strategies can illustrate the value of knowledge about them for informing decisions, both personal and collective? Not surprisingly, no definitive answers emerged from the workshop. More research and case studies are desperately needed for further progress. Nonetheless, I would like to humbly conclude here with simple idea that may help address these important questions.

Too often, a tendency to bisect the world—“this is human, that is nature”—pervades our casual thinking and public discourse. Yet, this division does not exist anymore, if it ever has. In contrast, seeing through the lens of SESs has great potential to change our individual worldviews and societal paradigms, hopefully for the better. Thus, I submit that the idea of SESs should be more widely and explicitly used to describe diverse aspects of our daily lives. Our dinners are products of SESs. The lawns and gardens we manage are SESs. Ubiquitous technologies impact SESs in indirect, unexpected ways. Indeed, the whole Earth is now properly seen as an SES because of humanity's cumulative impacts.

I am under no illusion that this suggestion will be agreeable to all or could catalyze major societal changes. Nonetheless, I think it has merit. In class discussions, the SES idea seems to spark valuable “a-ha” moments among my students, and it provides me with deeper personal understanding about my relationships to society and the environment. Inasmuch as the social-ecological system framework helped me reflect on my travels to the Matanuska Glacier in new ways, I hope that it might be useful to others for inspiring subtle, unexpected, and powerful thoughts about human-environment relationships in the SESs of our complex world.

For a short video of my visit at the glacier, search for “MOV03270 glacier” on youtube.