

Indigenous Knowledge and SDGs

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Introduction

- Caillon et al. (2017), McCarter et al. (2018), and Costanza et al. (2016) pinpoint deficiencies in contemporary indicator sets trying to capture human and ecological well-being, such as the UN Sustainable Development Goals (SDGs): they don't capture 1) the interrelations between the indicators, or 2) the processes that lead to good outcomes.
- We'll ask: Could Indigenous knowledge contribute something to sustainable planetary well-being which the SDGs try to capture?
- This question disintegrates into two parts:
 - What does it tell about the road by which to get there?
 - What does it tell about which outcomes to measure?
 - (we'll come to these later)

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Western Science vs Indigenous knowledge

- Why should we be interested in them? What do they know? Why not just tell them what is best basing on the superior Western science?
- What is Western Science from the viewpoint of an indigenous person?
(Kealiikanakaolehailani, Hawaii, Oceania)

Science-lead modernization project: pros and cons

“The advent and eventual primacy of the academic research enterprise, social and cultural modernization, and the market economy are Western sustainability science’s double-edged swords. These engines of change have contributed a great deal to improvements in the quality of life for humans across the planet: medical research and resulting innovations have extended lives and reduced or in some cases eliminated crippling diseases; slavery once normative is now a distant and shameful memory for much of humanity; and access to goods and services is being elevated for much of the Earth’s citizenry. And yet there are negative consequences including **ecological degradation on unprecedented scales** (Dirzo et al. 2014; The Millennial Ecosystem Assessment, www.millenniumassessment.org/), **large-scale disenfranchisement from market-based promises of prosperity** (Hawken 2011), and **emotional and psychological isolation in an era of electronic hyper-connectedness** (Louv 2006). Additional ... changes ... are the relentless infilling of a commodity ethic into our daily life, including into relationships with family and environment”

(Kealiikanakaolehailani and Giardina, 2016)

Sustainability in Sciences

“Millennium Ecosystem Assessment [On sustainability]: ‘The MA is an assessment that focuses on **the linkages between ecosystems and human wellbeing** and, in particular, on **ecosystem services**. An ecosystem is a dynamic complex of plant, animal, and microorganism communities and the nonliving environment interacting as a functional unit. The MA deals with the full range of ecosystems—from those relatively undisturbed, such as natural forests, to landscapes with mixed patterns of human use, to ecosystems intensively managed and modified by humans, such as agricultural land and urban areas. **Ecosystem services are the benefits people obtain from ecosystems**. These include provisioning services such as food, water, timber, and fiber; regulating services that affect climate, floods, disease, wastes, and water quality; cultural services that provide recreational, aesthetic, and spiritual benefits; and supporting services such as soil formation, photosynthesis, and nutrient cycling. **The human species, while buffered against environmental changes by culture and technology, is fundamentally dependent on the flow of ecosystem services.**”

(Kealiikanakaolehaililani and Giardina, 2016)

Sustainability sciences

- “Western sustainability science ... seeks general knowledge applicable across systems, with data being aggregated upwards and gained through broadly established methods and protocols. ... Western-based studies need not include as experts people from the place being studied (approaches are agnostic, so to speak)” (p. 62)
- “Western sustainability science emphasizes objective data-driven process, typically long-term monitoring of indicator variables or short-term experimental data collection” (p. 63)

Strengths

- “Strengths include methodologies and associated metrics that allow the impact (negative and positive) of actions (or inaction) to be quantified and monitored over time. For example, if society defines clean rivers as a sustainability value, Western sustainability science can provide specific metrics for what constitutes clean water and the tools for quantifying and monitoring cleanliness of the water over time, and the methods for correcting deviations.” (p. 61)
- “because of the hypothesis-driven framework in which Western sustainability science operates, managers can rely on robust results derived from complex analyses, often published in peer-reviewed publications” (p.61)
- “Given a reliance on strong metrics, managers know what component of an ecosystem is being examined and so to some extent what is being ignored.” (p. 61)
- “An additional strength is the systems nature of Western science. That is, Western sustainability science has biophysical tools (hydrological and biogeochemical techniques, economic analyses, remote sensing, modeling, etc.) to examine the effects of change on an entire system and how change varies across systems, for example, climate effects on water delivery from entire mountain ranges” (p. 61)

Weaknesses

- “At the conceptual level, Western sustainability science remains a surprisingly poorly defined identity as exemplified by ongoing debates about the motivations and drivers of resources management (e.g., Chase 1986; Marris 2011; Tallis et al. 2014)” (p. 61)
 - Why should we conserve nature? Due to instrumental reasons (our survival) or intrinsic value? (Tallis et al., 2014)
Threatens crippling the conservation efforts!
- “ Similarly, there is a poor understanding of the target baseline for sustainable management of resources and landscapes, itself complicated by realities of ever-changing natural forces that affect systems (Livingston 1968), and of human-induced global change (Root et al. 2003; Hawken 2011; Dirzo et al. 2014). ... baselines tend to be arbitrary—a compromise function that integrates societal pressures, ownership needs, and scientific best guesses at, for example, what something might have looked like had Europeans not settled in an area.” (p. 61)
- “Complicating what already are often intractable ecological problems, applications of Western sustainability science can encounter conflicting public sentiments about management, distrust of agency leadership especially when controversial management decisions seek to be implemented, and short-sighted political pressures to achieve outcomes that may not lead to real solutions”
- Note also the historical codependency between academia, expansionism (the first anthropologists onboard war ships, Harari, 2014), and market capitalism (expansionism in another sense: inventions brought fortunes and “well-being”). The academicians are dependent on the market-capitalist structures, fully in them, for making-ends-meet, which are socially defined and within the market-capitalist structures. What implications does this have to research and recommendations in Western Scientific frameworks (SDGs and economic growth)?

Weaknesses

- “because Western sustainability science must provide simple metrics that can be easily and quickly adopted by resource management entities that seek cost-effective approaches that work across systems, the focus of management applications is on a small number of charismatic or economically important organisms, processes, or outcomes that are of broad interest and perceived value. Sustainability of an entire system, including all of its components, typically cannot be examined or managed because resources, tools, and even understanding are lacking (Chase 1986).” (Not locality-, long-term-experience-based knowledge; but global, broad measures and methodologies detached of particular places)
- “Because of various pressures on management to succeed, managing for sustainability has at times drifted to “command and control” solutions (Chase 1986; Holling and Meffe 1996).” (p. 61)
 - CAC results in loss of system resilience because it means an attempt to increasingly control an ecosystem and also is manifested in socioeconomic institutions that respond to erratic or surprising ecosystem behavior with more control; [This kind of actions] ... usually result[...] in unforeseen consequences for both natural ecosystems and human welfare in the form of collapsing resources, social and economic strife, and losses of biological diversity.” (Holling and Meffe, 1996)

A case of the Baigas: backlashes of “conservation of nature”

- The lifestyles of the Baiga, in particular their shifting cultivation practice "Bewar," has raised controversy and confusion in the outside societies for at least 150 years, since the British colonizers. Connected to this, the Baiga have been subjected to a considerable amount of externally lead, coercive policies for changing their lifestyles, or places of habitation.
- Today, there are pressures to evict them from their lands to create nature reservation parks for tiger conservation. So, the target baseline is seen as “nature intact” as apart from human influence. At the same time, the tiger reservation parks are open for tourists which brings revenue. Also, after the indigenous are out of the way and do not complain, area in the parks can be given to mining industries? Some evidence of this.
- In this example there is command-and-control (evictions) by government, there is the question of baseline that bases on the “great divide” (Latour) between human and nature underlying Western thought, there are (outsiders’) societal pressures for wealth through tourists and mines, and ownership needs (eviction of the indigenous). Interesting how the “nature intact” or great divide intertwines with power politics. Also, this command and control has resulted in cultural change, distress, conflicts, loss of traditional practices, and have driven a number of adivasis from being highly skilled members of their now lost forest communities into non-skilled labor to the fringes of towns and cities. Additionally, there is some evidence that even tigers fare better in the regions where the adivasis live. So, the CAC has been counterproductive to its own aims.
- Note! Difficult, complex, and controversial issues. (vested interests and politics)

The solution for which problems or aims?

“Despite these weaknesses, humanity has turned to Western sustainability science for help with achieving the incredible balancing act of meeting:

(1) society’s need for equitable access to life sustaining resources (Ostrom 2009; Lamb et al. 2005; Vignieri 2014; The Millennium Assessment);

(2) the profit expanding needs of corporations and share-holder beneficiaries who are often disconnected from, and even misled about corporate resource extraction activities (Hawken 2011); and

(3) academic research’s need for reliable and robustly measured sustainability metrics” (p. 62)

Indigenous knowledge

- “Indigenous sustainability science emphasizes humans as components of a complex system that make up with other organisms an ecological web (Vaughan-Lee 2013 and chapters within; Donatuto et al. 2014). In this framework, ensuring the long-term health of the system directly supporting one’s survival and survival of community members [also non-humans; but which ones?] is the goal. And so quality of life is adjusted to meet the needs of the system and future generations. To achieve this, Indigenous sustainability science
- seeks local knowledge particularly relevant to a place, often scaled down and attained through long-term and local relationships that lead to the accumulation of observations and experience”
- “Indigenous science cannot proceed without individuals who are from the location being studied because expertise and knowledge resides with local individuals.” (p. 62)
- “Indigenous sustainability science emphasizes familial, that is regular and intimate approaches to knowing as with friends, spouses, children, parents, and extended family members.” (p. 62–63)
 - This means that they approach all things with respect in the sense of familial reciprocity, care when needed, and with regular interaction. We’ll come back to this later through Baigas again.

Why should we not bypass indigenous knowledge?

Threat of causing havoc to well-being, culture, environment and creating grudge.

Well-being consequences: Izquierdo (2009) tells how, although the clinical, Western assessments of their health show ameliorating health conditions, the Matsigenka themselves perceive their health as having worsened over the same period. One's own experience of one's health should matter for health? In the end, it is the subjective experience that matters only. Imagine: If no one would care for health whatsoever, it is difficult to see why the "objective" measures would be relevant either. Health obtains its significance only through its valuation in the subjective experience, West or non-West.

Cultural consequences: case example

- Havoc to culture: schools' effect on character - note SDG goal basic education for all: Izquierdo (2017): "He also described me the negative influence of schoolteachers [at least missionary, perhaps Peruvian as well] on Matsigenka children in eroding community values of goodness: obedience, hard work, collaboration, trust, and sharing-all basic premises for living a good life. 'Children used to be obedient to their elders. Even when boys were young, they had their own gardens. They weren't lazy like they are now. Now, people don't even want to collaborate in community work. Most important of all, they do not know what it means to share. Young men don't want to learn how to use a bow and arrow properly. They think they will be able to buy shotguns.' ” (p.71–72)

Western Science vs Indigenous knowledge

- Havoc to culture: Izquierdo (2017): “The pressure to change their culture and to make ‘progress’ has provoked in the Matsigenka a justifiable fear about their future. The Matsigenka have grown increasingly agitated about the massive cultural changes derived from new settlement patterns and international development projects in the region, and face strong pressure to comply with the demands of economic development and the consequent social, spiritual, and cultural requirements of this development ... they are at the same time expected to sell their indigenous exotic persona in order to participate in eco-tourism aimed at attracting visitors for national profit.” (p.71–72)

Environmental consequences

- Havoc to environment: Rodriguez (2017) tells how the state led forest management approaches saw the slash-and-burn practices of the Pemons in Venezuela as destructive to the forest, however, as the points of the elders were actually listened to, it became clear that the locality is such that if no clearing in the form of burning is done, and the forest is left intact, storms and lightnings may cause great fires wiping through the forests. Pemons' seasonal slash-and-burn practices reduced accumulation of fire fuel. Interestingly, Pemons saw the slash-and-burn practices as fulfillment of ancestral obligation to care for the Gran Sabana.
 - While not necessarily against science per se, it points to caution in overlooking the local belief and knowledge systems, and practices with the force of Science, f. ex..

Grudge

- Creating grudge: “... while my collaborators do experience the state as an ashitarori [Spirit master/owner/guardian], they do not experience it as their ashitatori. The state, embodied by the Peruvian president, is experienced as a master of evil beings — like extractive companies and Sendero — that it has released on Ashaninka territory to eliminate them and take over their land.” (Bartletti, 2017, p. 50)
- Then again, there have been forced evictions, wars etc which are not in the domain of Western Science necessarily.

Summary

- So, above it has been discussed why the indigenous knowledges should be taken into account-locally they may provide better means for reaching good societal and environmental outcomes.
 - Applications of Western Science often not apart from cultures of market-capitalism and profit seeking as evident in the SDGs. These associate with the contemporary global ecological crisis unlike many of the indigenous cultures.
 - Also, not taking them into account risks adverse well-being, cultural, and environmental consequences, and risks conflicts. (few of these were discussed as examples)
- Next, we discuss the weird claim that “New approaches developed in the context of IPBES emphasize using validation systems from within each knowledge system rather than using one knowledge system (for instance, western science) to validate information from another system (for instance, local knowledge) (Tengö et al. 2014). In part this is because definitions of human relationships to the environment based on different ontologies may conflict because they are not addressing the same system or perhaps the same reality.” I define ontology here to mean both conscious and unconscious ways of understanding reality. So, (at least) local sustainability or conservation progress should not necessarily be measured by Western Science whatsoever; but by local groups and their understandings. (Caillon et al., 2017, p.27)

Don't cross ontologies

- Example: Amongst the Ashaninka of Peruvian Amazon, also the villages upstream from the place where companies' boats shipped goods thus disturbing waters and fish stock, demanded compensation for “a serious scarcity of fish, and the plants in their gardens were either taking longer to grow or rotting too quickly, and were not as large, beautiful and satisfying to eat as they used to be. Other delegations from different rivers in the area expressed similar worries and demanded either a closure of PlusPetrol operations or a large increase in compensation payments. Some spoke of a few million rather than a few thousands of dollars.” (Bartletti, 2017, p. 48)
- “The PlusPetrol representatives denied any scientific basis for these complaints as the Unini, an affluent of the Ucayali, does not receive any Plus-Petrol-related traffic, and could not receive any pollutants in case of a spill, as it would be physically impossible for it to move upriver to the Unini. The delegates vociferously demanded payments, and the organisers had to call for order.” (p.48)
- “Weeks later I met a PlusPetrol representative in a restaurant in Atalaya, who emphasised that locals would do anything for money; even try to fraudulently claim that their territory was being polluted, when it was scientifically impossible for any pollutants to reach that area.” (p.48)
- Similar concerns and worries about decreased productivity of land and reduced game in other regions as well. What's going on?

Don't cross ontologies

- “Emilio initially associated these changes with the presence of extractive industries in the Tambo [the river], but as our conversation went on, he also blamed those changes on the bloodshed that people and aipatsite had experienced during the war; on recent plans for hydroelectric dams in the area; and on cocaine production. He said: [Plants do not grow] as easy as they used to, the land isn't the same it used to be before the war. We plant like we used to but it's like it doesn't want to produce any longer because of all the violence. It's angry with people for all the deaths, all the people that were killed and that were just left there to rot without burial, aipatsite [has] tasted so much blood. Plants start to grow and then they dry up or they rot. ... [The ashitarori of animals] get angry if men kill too many of their animals, or if they hurt them and not kill them (...) It's like with us, if someone hurts our animals, if someone steals a chicken (...) we get angry too. (...) We ask, who did it? Who hurt it? (...) [A]nd we defend our animals. The ashitarori do the same.” (p.48-49)
- the Ashaninka understood the reason for less game and fish, and worse land productivity to be because of past wars, illdoings to the land and people, chemical usages in cocaine production and so forth had angered the guardian spirits of land, animals, waters, and that they, therefore, for protecting their own, hid them from people.
- For this reason, molesting river affects all places because it disturbs the balance and the spirits who protect the different species and places. It is important that the spirits may not be different or separate from the rivers and places; but are them. So, talk of river for them is talk of the living entity or spirit and for us it is some non-living, dead, mechanical thing. This, “uncontrolled equivocation,” (Viveiros de Castro, 2004) was also unconsciously behind the misunderstandings between the locals and the PlusPetrol representatives believing in science that lead the representatives to think the locals as money-greedy liars.

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Also Western views rely on certain ontologies

- But this sounds ridiculous! Angry Mother Earth?
- But Western Science bases on some ontology as well; it is historical, not absolute, impermanent. In the future it will likely be something else again.
- Let us see where and how natural sciences and social sciences meet and relate to each other-why are their ontologies, methodologies, and approaches so different? (“höpöhöpötieteet”)

Natural science may not be as innocent as it portrays

- Positivism (Auguste Comte): Only external information from senses is valid because amenable to empirical tests.
- Interpretivism: Study of subjects who live in external world; but have layers of interpretation on it. Also researchers are similar subjects. So, methodologies need to be different. Focus on meanings.
- Post-humanism (f. Ex. Latour, Haraway): Tracing dependencies, it seems that all things are part of networks which contain objects, politics, culture, subjective, nature and any category. F. ex. The abundance of carbon dioxide in the atmosphere relates to historical political, technological, natural, chemical, culture, thoughts, attitudes and so forth processes. Also, its observation depends on similarly mixed processes including historical political technological natural build-up of technology able to measure it. The measurement itself depends on the CO₂, the agents using the devices, their interpretation and so forth. Subjective and objective are not neatly separable if at all. (if I got it right). The “great divide” of culture vs nature is but a historical naturecultural dualism.
- “For example, work on ethno-classifications shows that how people know and see the world is also how they classify it (Brown et al. 1976, Friedberg 1992). As such, each ontology results in different ways of seeing, ordering, ranking, and categorizing; this has profound implications for conceiving of problems, identifying solutions, and measuring success toward envisioned futures.” (Caillon et al., 2017) So, we can’t separate “objective reality” from “interpretation” and culture-dependent categories. Time, space (Durkheim and Maus, 1903)?
- What is the first thing an astrophysicist examines before looking at the stars? The instrument. Similarly with the mind or however you call it.
- Also, nature, or materia, or objects, are not devoid of meaning in the sense that they are objective by being devoid of meaning but materia or nature themselves are meaning! And, also products of histories of intertwining relations and things crossing categories.
- Afternoon tea is as much natural or cultural as forest flowers.
- Takeaway: western science may not be as innocent as it appears; and the difference between the modern with its sciences and the premodern (incl indigenous) may not be as clear cut and simple.

Where Natural and Social sciences meet?

- Positivism (Auguste Comte): Only external information from senses is valid because amenable to empirical tests.
- Interpretivism: Study of subjects who live in external world; but have layers of interpretation on it. Also researchers are similar subjects. So, methodologies need to be different. Focus on meanings.
- Post-humanism (f. Ex. Latour, Haraway): Tracing dependencies, it seems that all things are part of networks which contain objects, politics, culture, subjective, nature and any category. F. ex. The Carbon dioxide relates to political and technological. The “great divide” of human vs non-humans is but a historical, social construction. Durkheim and Mauss 1903 reported how in some indigenous societies (also humans and having a culture) all nature and people were divided by for example masculinity and femininity. “Objects” of world belonged into ontologically different categories; these categories organized both people and the nature. “For example, work on ethno-classifications shows that how people know and see the world is also how they classify it (Brown et al. 1976, Friedberg 1992). As such, each ontology results in different ways of seeing, ordering, ranking, and categorizing; this has profound implications for conceiving of problems, identifying solutions, and measuring success toward envisioned futures.” But today we have also similar ontological divide. That between humans and non-humans.
 - So, also natural sciences is constructed? This division results in certain practices and knowledge-creation processes, and, thus, knowledges, that might not otherwise be there.

Summary

- Western science is not devoid of ontology. A part of it are the dichotomies of nature vs culture, and subject vs object. These are similarly parts of historical transcategorical processes, not-impermanent or necessarily more real than those of the indigenous.
- The two may have varying predictive capabilities.
- The predictive capabilities for both societally and ecologically good outcomes are likely better in the indigenous knowledge traditions at least when dealing with the local issues.
- Also, it merits caution to impose Western scientific evaluations or outcomes as preferred to those from other ontologies at least locally.

Omitted slides

- Slides here omitted as they were not discussed and because include non-published results.

References

- Bartletti. 2017. The Angry Earth-Wellbeing, Place and Extractivism in the Amazon. *Anthropology in Action*, 23, no. 3 (Winter 2016): 43–53 © Berghahn Books and the Association for Anthropology in Action.
- Caillon, S., G. Cullman, B. Verschuuren, and E. J. Sterling. 2017. Moving beyond the human–nature dichotomy through biocultural approaches: including ecological well-being in resilience indicators. *Ecology and Society* 22(4):27.
- Harari, Y. N. (2014). *Sapiens: A brief history of humankind*. Random House.
- Haraway, D. J. (2013). *When species meet* (Vol. 3). University of Minnesota Press.
- Kealiikanakaoleohaililani, K., & Giardina, C. P. (2016). Embracing the sacred: an indigenous framework for tomorrow’s sustainability science. *Sustainability Science*, 11(1), 57-67.
- Latour, B. (2012). *We have never been modern*. Harvard university press.
- Izquierdo, Carolina (2009): “Well-Being among the Matsigenka of the Peruvian Amazon” in the book “Pursuits of Happiness – well-being in Anthropological perspective”
- Rodriguez, I. (2017) Linking Well-Being with Cultural Revitalization for Greater Cognitive Justice in Conservation: Lessons from Venezuela in Canaima National Park, *Ecology and Society* 22(4):24.

Thank you