

FOREGROUNDING CRITICAL SYSTEMIC AND INDIGENOUS WAYS OF COLLECTIVE KNOWING TOWARDS (RE)DIRECTING THE ANTHROPOCENE

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ABSTRACT

This paper begins with the understanding that the global commons is under threat. In the light hereof I consider why it is important to appreciate Indigenous styles of collectively-oriented knowing, where selves are understood as “selves-in-relation” to one another and to all living and non-living things, as part of the web of life. I suggest that often accounts of the Anthropocene (as proposed by various authors postulating this concept) do not accentuate how the forcefulness of human impact on the world (by virtue of humans manipulating and extracting resources) can be regarded as rooted in Western-oriented supposedly rational styles of knowing and calculating, which to date have been historically dominant. This approach to knowing and being-in-the-world is ill-equipped to incorporate a conception of our existing as humans *in relation to others*, including to all that exists. Indigenous thinking as expounded by various Indigenous authors across the globe (which I define as I proceed with the paper) starts with the premise of connectivity of life forces, and therefore with the assumption that we, as humans, *are called upon to play a responsible role in our caring for each other and for the earth*. Working in terms of the notion of care does not mean that we are less rational, but on the contrary that we recognize that our existence is contingent on our supporting, and being supported by others (including non-living entities). This in turn implies an attitude of respecting how “individual” well-being is a function of the well-being of the whole. Based on these considerations, I propound in the paper that planetary stewardship *should not be envisaged as applicable only now that we have entered the epoch named by some as the Anthropocene*, where the human power to manipulate the environment has become a global geological force in its own right. Instead, we need to question the way in which this power has hitherto been used, and the (dominant) worldview that enabled the use of such power as a manipulative enterprise. Such questioning allows us to *reconsider the values in terms of which the Anthropocene can be approached*, by taking on board—and indeed foregrounding—Indigenous views, and bases, of stewardship. The paper concludes with some considerations of how diverse knowledge systems can be brought into communication/integrated towards enhanced ecosystem governance.

Keywords: Systemic challenges, Indigenous collective knowing, Ecosystem governance, Anthropocene

INTRODUCTION: CONCEPTUALIZING THE ANTHROPOCENE

Steffen, Grinevald, Crutzen and McNeill (2011a, p. 842) define the onset of the Anthropocene in terms of the scale of the human imprint on the global environment which now, they argue, “rivals some of the great forces of Nature in its impact on the functioning of the Earth’s system”. Otherwise put, the term Anthropocene suggests that “humankind has become a global geological force in its own right” (2011a, p. 843). Looking historically at the human-environment relationship, they state that prior to the Anthropocene, indeed over the last millions of years, humans and their ancestors have “modified natural ecosystems to gain advantage in gathering vegetable food sources they required or in aiding the hunt for animals they hunted”—but they were never able to fully transform the ecosystems around them. They indicate that certain pre-industrial events are sometimes cited as already heralding the beginning of the Anthropocene, but for them, it was the Industrial Revolution,

with its origins in Great Britain in the 1700s, or the thermo-industrial revolution of nineteenth century Western civilization [that] “marked the end of agriculture as the most dominant human activity and set the species on a far different trajectory from the one established during most of the Holocene [the prior epoch of more stable human-environment relations]. (2011a, p. 848)

Steffen et al. indicate furthermore that after World War II the human enterprise (and imprint on the global environment) switched gears, creating a dramatic change such that the 1945-2000 era can aptly be called the “Great Acceleration”. They surmise that the quest for renewed economic growth is what “drove the final collapse of the remaining pre-industrial European institutions” (2011a, p. 850). They explain how the post-world war economic system, led by the USA, was built around neo-liberal economic principles stressing “open trade and capital flows”. They note that “the post-World War II economy integrated rapidly, with growth rates reaching their highest values ever in the 1950–1973 period” (p. 850). They explain that:

Partnerships among government, industry and academia became common, further driving innovation and growth. More and more public goods were converted into commodities and placed into the market economy, and the growth imperative rapidly became a core societal value that drove both the socio-economic and the political spheres. (2011a, p. 850)

But they point out that “environmental problems received little attention during much of the Great Acceleration” (2011a, p. 850). Indeed “emerging global environmental problems were largely ignored” (2011a, p. 852).

In setting out their account of the onset of the Anthropocene, they point to the skewed distribution across countries of impact on the environment to date, noting that “the poorest countries ... have contributed less than 1 per cent of the cumulative CO2 emissions since

Foregrounding Critical Systemic and Indigenous Ways of Collective Knowing

the beginning of the Industrial Revolution” (2011a, p. 853). However, recent data suggests “dramatic changes over the past decade: For 2004, the emissions from developing countries had grown to over 40 per cent of the world total” (2011a, p. 853). Nonetheless, they add that “about 25% of the growth in emissions over the last decade from developing countries was owing to the increase of international trade in goods and services produced in these developing countries *but consumed in the developed world*” (2011a, p. 854, my italics). They also add that it is clear that resource constraints will prevent developing countries (other than China and India) from following the growth trajectory of the more advanced economies (2011a, p. 854).

From Steffen et al.’s (2011a) account of the Anthropocene we can see that for them it seems as if—during what they call the “Great Acceleration” period—there has been a general consensus throughout the globe that economic growth needed to be accomplished, including at the cost of environmental damage. The environment was seen as exploitable/manipulable for the benefit of human advantage (as indeed they postulate also occurred throughout human history, but to a lesser extent). *They do not refer to differences in worldviews*, where, for instance, certain Indigenous patterns of behavior and lifestyle mitigated against this exploitative understanding of humans in relation to nature.

It is also noteworthy that although Steffen et al. point to the skewed benefits which accrued to different countries, they do not highlight the dominant/imperialist influence of Western-styled views on so-called core societal values that “drove both the socio-economic and the political spheres” (2011a, p. 850). *They assume that these “core values” (as they call them) were more or less shared across the globe.* Or rather, they leave in abeyance the question of who subscribed to these “core values”. The imperialist consequences of the quest for unlimited growth as built into the political agenda of the rich countries (at the expense of underdeveloped ones) does not feature in their account, where they focus mainly on what they call “open trade and capital flows” (2011a, p. 850) instead of on the way in which (underdeveloped) countries were colonized and resources extracted for the benefit of the wealthy. It can therefore be argued that they do not sufficiently critically reflect upon how the growth agenda rode roughshod over other human values, such as care for people and for the environment.

When Steffen and a range of other authors (Steffen et al., 2011b) consider the question of how planetary stewardship may now be instated as an alternative to the unlimited growth agenda, they note that at present a human development index (HDI) has been devised to measure development in human terms (p. 749). Furthermore, recognizing that material wealth is not the sole (or best) indicator of wellbeing, they point out (2011b, p. 749) that deficiencies can be located even in this index in that it fails to incorporate “cultural or psychological dimensions or security considerations” (as also highlighted by Wilkinson and Pickett, 2010). And they note (p. 750) that global aggregates of increase in wealth “mask the ways in which the distribution of wealth and the impacts of ecosystem service decline are skewed, between nations and within them, a factor that may have a strong bearing on well-being”. (Here again they cite Wilkinson and Pickett, 2010.) But I suggest in this paper that they do not fully appreciate the alternative values that need to be brought

to bear, and that have indeed been suggested by various Indigenous and Indigenous-oriented authors writing about sustainable development (cf. Barnard & Van Paassen, Bawden, 2011; Bullard, 2002; 2013; Cannella & Manuelito, 2008; Chilisa, 2012; Christakis & Bausch, 2006; Cisneros & Hisijara 2013; Harris & Wasilewski, 2004; McIntyre-Mills, 2002, 2008, 2014a,b; Murove, 2005; Romm, 2014, Ross & Pickering, 2002; Smith, 2011).

It should be noted that I use the word “Indigenous-oriented” in this paper to apply to authors who do not necessarily have an Indigenous background in a country by birth, but who *sympathize with the values and worldviews as espoused in Indigenous traditions*, and who enter “Indigeneity” in this way. Some of these authors/practitioners become recognized by Indigenous people, and become what Christakis calls honorary members of the community (cf. Romm’s reference to this, 2010, p. 12). Lowan-Trudeau also suggests that through “mutually respectful engagement” non-Indigenous people can be “welcomed into Indigenous communities, further expanding opportunities for intercultural and eventually transcultural experiences and creations grounded in a ... sense of collective connection” (2014, p. 360). McIntyre-Mills offers another discussion of ways of applying Yeperenye dreaming to heal divides between Indigenous and non-Indigenous thought systems as part of a process of ‘pooling human knowledge’ and finding solutions to the “shared future of humanity as we know it and the planet as we know it” (2003, p. 327).

In the light hereof, I suggest, as do, for instance, Harris and Wasilewski (2004) that one of the problems with imperialism—to which Steffan et al. allude when they speak about a USA-led liberal economic (indeed capitalist) system (2011a, p. 850)—is that *alternative value systems (and attendant worldviews/cultural orientations and understandings of the economy) became voiceless in the dominant drive for increasing material wealth at all costs*. In addition, when they suggest that the time has come in the current context for “the transformation from resource exploitation towards stewardship of the Earth System” (2011b, p. 746), they seem to forget that many Indigenous authors have postulated the idea of stewardship as built into Indigenous knowledge systems. This is not only *now* required, now that the Earth is no longer able to carry the costs of human exploitation, but can be seen as value-based—based on values of always caring for that which is around us (other humans and living and non-living things). In the next section I point to certain authors contributions in considering our stewardship role, which can be seen to be somewhat at variance with (and critical of) Steffen and colleague’s concentration on the need only now (now that we have reached the epoch of the Anthropocene) to recognize the importance of stewardship, as they imply in their article “from global change to planetary stewardship” (2011b, p. 746). But first I unpack further some of their assumptions.

SOME ASSERTIONS (OF THOSE DEFINING THE ANTHROPOCENE) THAT CAN BE REVIEWED

Steffen et al. (implicitly) re-iterate their assertion that certain core values prevailed post World War II when they indicate that Diamond (2005) proposes that “societies collapse if

Foregrounding Critical Systemic and Indigenous Ways of Collective Knowing

core values become dysfunctional as the external world changes and they are unable to recognize emerging problems” (2011b, p. 751). They cite Diamond and others as referring to societies becoming locked into obsolete values, hindering the “transition to new values” (p. 751). In this context they suggest that:

A core value of post-World War II contemporary society is ever-increasing material wealth generated by a growth-oriented economy based on neoliberal economic principles and assumptions ... a value that has driven the Great Acceleration but that climate change and other global changes are calling into question. (2011b, p. 751)

What is missing from this account of “contemporary society”, I suggest, is a consideration of *alternative values that have been propounded within other cultural frameworks* (other than the neoliberal tradition) but which became sidelined/silenced via dominant discourses. Also, what is missing in this account is not only that *climate change* is calling into question these values, but that these values had been called into question prior to the “Great Acceleration” as they name it, within many Indigenous knowledge systems operating in terms of alternative “core values”.

In their article entitled *Indigeneity, an Alternative Worldview* (2004), Harris—founder of the organization called Americans for Indian Opportunity (AIO)—and Wasilewski (2004) explain what they take to be a value cluster that can be associated with Indigeneity across the globe. In outlining these values, Harris and Wasilewski identify four R’s, which they see as part of the cultural heritage offered by “Indigenous societies”, although they admit that there is still scope for strengthening of these processes:

Relationship is to be understood in the

profound sense that we human beings are related, not only to each other, but to all things, animals, plants, rocks—in fact, to the very stuff the stars are made of. This relationship is a kinship relationship We thus live in a family that includes all creation. (2004, p. 492)

Responsibility means that we feel obligated to

care for all of our relatives. Our relatives include everything in our ecological niche, animals and plants, as well as humans, even the stones, since everything that exists is alive. (Harris & Wasilewski, 2004, pp. 492-493)

Reciprocity implies that

once we have encountered another, we are in relationship with them. At any given moment the exchanges going on in a relationship may be uneven. The Indigenous idea of reciprocity is based on very long relational dynamics. (2004, p. 493)

Redistribution is rooted in a

sharing obligation. Its primary purpose is to balance and rebalance relationships. Comanche society, for example, ... had many, many ways of redistributing material and

Foregrounding Critical Systemic and Indigenous Ways of Collective Knowing

social goods The point is not to acquire things. The point is to give them away. Generosity is the most highly valued human quality This obligation means sharing, not only material wealth, but information, time, talent and energy, one's total self. (2004, p. 493)

Smith (1999), writing from a Maori perspective, also refers to these values and notes that they are related to a worldview that emphasizes connectedness, which she sees as a common thread running through Indigenous styles of thinking albeit that there is still clearly diversity within meanings, and interpretations, of Indigeneity. She suggests that a common thread that Indigenous authors stress, is the “importance of making connections and *affirming connectedness* Connectedness positions individuals in sets of relationships with other people and with the environment” (1999, p. 148, my italics). And Kovach (2009) suggests that the term “self-in-relation” (a translation of the Cree word *nisitohtamowin*” (2009, p. 27) aptly captures the essence of the spirit of Indigenous styles of knowing and being in the world, where, she notes, it is understood that selves cannot and should not be considered as separated from their connections with other living and non-living entities. Lowan-Trudeau summarizes that: “inherent in most Indigenous worldviews is recognition of the inherent value, spirit, and interconnectedness of all people, living creatures, and bioregions” (2014, p. 356).

Cannella and Manuelito, for their part, indicate how an Indigenous-oriented feminist-based environmentalism “offers unique epistemologies that assume interconnections between human and nonhuman life and nonlife”. They see such a feminism as rooted in an ethic of care, while encouraging engagement in “theorizing and construction of knowledge that avoid dualistic, rationalist individualism” (2008, p. 53). In other words, once individualism is avoided and it is recognized that “reason” goes hand in hand with emotion (caring) then the foundation is laid for forms of action that are not based on manipulation either of people or of the environment.

Christakis (2014, p. 18) indicates how in his conversations with La Donna Harris (founder of AIO) she expressed implications of Indigenous ways of knowing in terms of an orientation to developing mutual visions, rather than an orientation to “win” over and above others (or the natural environment). He cites Harris as follows:

Who is winning becomes unimportant. What becomes important is the effectiveness of the entire group. This collective success by way of individual participation is an ancient traditional value, and it enables us to see the collective reality. This is what attracted us at AIO to structured dialogue [a way of designing dialogue developed by Christakis and others, aided by computer software] ... because it enables people from totally different backgrounds carrying totally different histories to see collective realities as they emerge in an ever dynamic present. (Harris, as cited in Christakis, 2014, p. 18)

Based on this kind of thinking, Harris and Wasilewski express concern that the course taken by globalization dominated by “power and profit” from the start threatened the potential for positive relationships, where people could more collectively define the trajectory of history, while also caring for Mother Earth (2004, p. 489). They contend that:

Foregrounding Critical Systemic and Indigenous Ways of Collective Knowing

As we look at the world around us, we have to recognize that existing systems based on Western models of governance are not working. The imposition model continues to cause great pain. We need to establish respectful, caring relationships of responsibility with each other [and with Mother Earth]. (2004, p. 499)

They go on to indicate that the problem with the system that became established/imposed (based on “free market principles”) was “devoid of care”. As they state: “the economic system does not care if any of these communities [at local, regional or national level], or if the Earth itself, exists into the future” (Harris & Wasilewski, 2004, p. 499).

From this unease as expressed by Harris, evidently the “core values” identified by Steffen et al. of “ever-increasing material wealth” would not be subscribed to by Indigenous-oriented authors and/or ecofeminists who see that this growth trajectory was ill-fated from the start.

Steffen et al. assert that:

We are the first generation with widespread knowledge of how our activities influence the Earth System, and thus the first generation with the power and the responsibility to change our relationship with the planet. Responsible stewardship entails emulating nature in terms of resource use and waste transformation and recycling, and the transformation of agricultural, energy and transport systems. (2011b, p 757)

Again, this assertion of Steffen et al. *seems to erode the contributions that Harris and others associate with a more ancient wisdom (and not only with “this generation”)*, where concerns with the way in which humans relate to “the planet” were (often) written into cultural traditions. Nonetheless, Harris and other Indigenous thinkers would agree with Steffen et al. that at this historical conjunction, as Steffen et al. put it, “an effective architecture of a governance system for planetary stewardship is likely to be polycentric and multi-level rather than centralized and hierarchical” (2011b, p. 757). And they would agree that it “needs to be achieved quickly” (as put by Steffen et al., 2011b, p. 757). For this to happen, though, these Indigenous authors suggest that *ways of appreciating what Indigenous knowledge systems have to offer, need to be (quickly) developed too.*

AN ALTERNATIVE UNDERSTANDING OF NEO-LIBERAL ECONOMICS: A VIEW FROM AFRICA

The trajectory taken when neo-liberal economic principles became world-wide applied (led by the USA, as Steffen et al. 2011a, p. 850, note) was not the only possible one that could have been taken. To support this point, I refer primarily to Murove’s African-centered analysis of the consequences of this global imposition and how it rested on a specific view of economics that was not universally shared. This is not to say that Murove’s analysis of what Indigenous African worldviews offer is uncontestable or that all those espousing an African humanism would agree with his analysis. But I am using his

Foregrounding Critical Systemic and Indigenous Ways of Collective Knowing

work in the context of this paper because he connects African humanism very clearly with also caring for “Mother Earth”. He refers favorably to the Stoic philosophy of the Church Father Gregory of Nazinzen, as cited in Hengel (1986), and sees connections between this and African worldviews. He notes that Gregory of Nazinzen interprets two major phases in (economic) history:

The first phase was characterized by harmonious existence between humanity and nature, whereby humanity was under the tutelage of nature. In this primordial state, nature was seen as a relative to live with instead of subduing. The second phase in the history of this evolution became that of avarice-driven private ownership of property. This phase was a precipitation of social and environmental discord and humanity’s ultimate vulnerability. (2005, p. 24)

From Murove’s understanding of the “first phase”, where nature is seen as a *relative*, we can see that this concurs with Harris and Wasilewski’s account of the family on earth, where we are all relatives (2004, p. 492). And the notion that relatives should live in harmonious relationships (as expressed by Harris and Wasilewski) is likewise shared by Murove. Like Harris and Wasilewski, Murove laments the stage of “evolution” driven by avarice, which went hand in hand with social as well as environmental discord.

Murove refers to the African concept of *Ubuntu* (translated as “I am because we are”) and relates this to the Shona concept of *Ukama*. He explains that *Ukama* means

being related and interrelated, whereby human well-being and the well-being of everything that exists is understood in terms of interrelatedness. Relationality is seen as indispensable to the well-being of everything. (2005, p. 151).

Now he argues that according to both *Ubuntu* and *Ukama*, human identity is not only restricted to fellow human beings, but includes the whole of life:

What it means to be human is not only restricted to human society but also to the natural world. . . . In *Ukama*, “a person can only be a person in, with and through not just other people but *in, with and through* the natural environment. (Murove 1999, p. 1; Prozesky 2001, p. 4). (Murove, 2005, p. 151)

Murove does not interpret African humanism as implying that the natural environment becomes marginalized in status in the scheme of things (relative to humans), but on the contrary as implying *that our humanity rests upon our connectedness with nature*. (This makes provision for Midgley’s (1996) suggestion that a critical systemic approach need not imply that ecological concerns are undervalued in the quest for human emancipation. Smith adopts a similar approach in regard to the concerns of critical systemic thinking with “the simultaneous improvement of human well-being and ecosystem health” (2011, p. 1).)

Murove suggests that in contrast to Cartesian conceptions of human rationality (as linked to individual identity), “the individual’s identity is something communal or is an identity

Foregrounding Critical Systemic and Indigenous Ways of Collective Knowing

that ceases to be meaningful outside the realm of communion with others in society as well as with all realities that constitute existence” (2005, p. 154). Based on this view of “human nature”, Murove offers a critique of economic structures premised on the idea of humans as essentially selfish. He argues, following Polanyi (1968), that, as he puts it,

self-interest or greed did not have a universal applicability in all economic relations, rather, it was an evolutionary antecedent of early modernity in western society. Polanyi went a step further to argue that in many non-western societies, selfishness was rather externally induced, especially during the era of colonialism. (2005, p.72)

Murove treats Polanyi as suggesting, by implication, that

in societies where people have an inherent tendency to care for each other, economic relations based on competitive greed could not have existed. It follows that economic relations that were based on greed or selfishness were actually invented in the same way that they were invented in the western societies during the era of early modernity. (2005, p. 72)

Murove proposes that the liberating effect of this analysis is that we can understand “the free market idea as an historical social creation, or a phenomenon that was consciously brought into existence by philosophers and economists” (2005, p. 73, my italics). This implies that it is *capable of being altered* and indeed that its alteration is not out of line with “human nature” (seen from an Indigenous perspective). Furthermore, the quest to care for all that exists—including for all living and non-living things—can also be seen as consistent with our human potentialities, as humans. McIntyre-Mills supports and extends this argument when she notes in her book on *Systemic Ethics* that “transdisciplinary research diverges from the limited calculations of economics and is instead rooted in notions of what wellbeing actually means for cultural change” (2014a, p. 28).

Also addressing the question of how the natural world outside of human existence became seen in calculative terms, Masemula (2013) expresses, with reference to Cajete, 2000, how “Western paradigmatic views of science are largely about measurement using Western mathematics” (2013, p. 125). He notes how Cajete criticizes the imposed mathematization of nature wherein “mathematics has ... been superimposed on nature like a grid and then examined within that framework” (p. 125). A consequence of this mathematization is that other ways of comprehending, and engaging with, nature become excluded.

In addition, Masemula cites Gingras’s (2001) critique of the way in which Newtonian mechanics distilled knowledge “into science and non-science [with the latter being devalued], while the mathematization of physics further distilled the knowledge of nature that had been the domain of philosophers. (2013, p. 126). He refers to Gingras’s account of the negative consequences of the mathematization of our knowledge of nature:

- **Socially**, the use of mathematics in explaining nature “excluded actors from legitimately participating in discourses on natural philosophy”. (It was thus elitist in

Foregrounding Critical Systemic and Indigenous Ways of Collective Knowing

essence, rather than inviting collective considerations around our relationship to nature.)

- **Epistemologically**, the use of mathematics in dynamics had the effect of “replacing explanations by calculations”. (Indigenous-oriented understandings of the natural world, as expressed in non-mathematized language, were thus quashed.)
- **Ontologically**, “by its ever more abstract treatment of phenomena”, it allowed scientists to assume an emotional distance from the realm of nature—with, as we have seen, deleterious consequences for possibilities of developing a caring relationship. (Masemula, 2013, p. 126)

What I wish to show with reference to these authors’ work, is that there is clearly a need for humans to appreciate *diverse perspectives*, rather than primarily credentializing Western-oriented approaches to knowing and to living, which then become imposed (either physically or symbolically). McIntyre-Mills (2014c) expresses a similar sentiment as follows:

Significant research needs to contribute to developing insight and foresight. It needs to strive to foster and manage diverse forms of knowledge, including verbal, visual, physical, musical mathematical, introspective and interpersonal. (2014c, p. 8)

Only in this way, McIntyre-Mills argues, can we hope to “address complex socio-environmental challenges” (2014, p. 8). Of course, as many Indigenous authors themselves recognize, the (re)credentializing of Indigenous knowledge systems and styles of knowing does not imply that all “knowledge” (and ways of acting) as proffered within Indigenous systems has to be accepted. Rather, the point is to be open to a dialogical engagement with a variety of ways of knowing, appreciating what Indigeneity has to offer, but not assuming that it is all-knowing (cf. Romm, 2014). Goduka clarifies this stance:

There is historical and contemporary evidence that Indigenous peoples have committed environmental “sins” through over-grazing, over-hunting, over-cultivation of the land and sometimes over-reliance on their knowledge without wanting to draw on and integrate other ways of knowing. (2012, p. 14)

Goduka calls for an openness of spirit which allows Indigenous Knowledge (IK) to be a *dynamic system* of knowledge production, which can accommodate alternative visions (and approaches to knowing).

In the next section I turn to two examples of attempts to indeed foster diverse approaches to knowing, in the context of ecosystem governance. The first example is of a case in South Africa; the second refers to an Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem services.

SYNTHESIZING MODERN SCIENCE AND INDIGENOUS KNOWLEDGE SYSTEMS: SOME EXAMPLES

The first example that I discuss in this section is a case offered by Kaschula, Twine and Scholes (2005) of coppice harvesting of fuelwood species on a South African Common.

A Community-based Approach to Sustainable Coppice Harvesting (South Africa)

Kaschula et al. (2005) explain their approach to research, based on utilizing scientific and indigenous knowledge in a community-based natural resource management project in South Africa. They indicate that the research was set up as a cooperative relationship between “local” (Indigenous) and “scientific” ways of knowing. The project was aimed at dealing with coppice harvesting of fuelwood species towards engendering a community-based natural resource management process. The project took into consideration the Indigenous concern with recognizing that “Indigenous cosmologies ... treat plant, animal, and human interactions as a single spiritual, moral, and regenerative system”. The research sought to “incorporate these cosmological traits into management policy” (2005, p. 388).

As far as the research process is concerned, this meant that the researchers tried to move towards processing “a complex collection of biological and social data with a view to implementing sustainable, locally-administered, resource management practice” (Kaschula et al., 2005, p. 392). This in turn meant respecting that there are a variety of ways of approaching the question of how to encompass local understandings of tree vegetative regeneration. Apart from collecting “biological data” (and interpreting it via the use of variable analysis) they also were concerned with investigating how communities make use of, and manage their own natural resources. The researchers were keen to consider the comparison between the “subjective” accounts of participants (in regard to tree regeneration) with the supposedly more “objective” scientific information gained by isolating identified variables.

They comment as follows:

Whereas scientific knowledge is inferred from the isolation and quantification of single variables, Indigenous knowledge tends to focus more on the bigger picture, bracketing plant responses into general trends and “rules of thumb” rather than specific categories. (2005, p. 410)

Furthermore, the Indigenous way of approaching the issues was, in the researchers’ view, more systemic, in that it required understanding and operating “at the broadest systems-level scale” to encompass multiple levels—including social and political and not just biological levels (Kaschula et al. 2005, p. 410).

Ultimately, according to Kaschula et al.’s account, the researchers, with participants, worked to unite but not deny the differences between these different approaches, so that a

Foregrounding Critical Systemic and Indigenous Ways of Collective Knowing

community-based natural resource management system which gave credence to both could become developed. This was by admitting that the scientifically isolated variables could be seen as part of a web of interrelated variables (which themselves were seen as in effect not isolatable from other variables), and by taking this interconnectedness into account in the communal development of a workable way of knowing in this context.

The next example to which I turn is one that reports on efforts to develop functional mechanisms in an international forum for “legitimate, transparent and constructive ways of creating synergies across knowledge systems” (Tengo, Brondizio, Elmqvist, Malmer, & Spierenburg, 2014, p. 579).

An Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES)

Tengo et al. (2014) refer to the recently established Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), which they see as an initiative aimed at specifically providing for “indigenous and local knowledge and its contribution to the conservation and sustainable use of biodiversity and ecosystems” in its operational principles and as part of its evaluation of processes (IPBES 2012, 2013a,b). They note that in the context of the IPBES, where “power inequities and epistemological differences between diverse knowledge systems are brought to the fore” it is important that the participants recognize that there are various ways in which one can treat the differences in outlook as offered in different knowing systems (2014, p. 582). They refer to three options that can be differentiated:

- integration of knowledge;
- parallel approaches to developing synergies across knowledge systems; and
- co-production of knowledge.

They note that these terms (integration, parallelism and co-production) may be used differently by different scholars, but they argue that the tendency within an “integrative” approach, is for the credentializing of local/Indigenous knowledge *only when it can be brought into alignment with methods for scientific validation* (as in laboratory trials). In contrast to this, a parallel approach tries to assign *equal status* to different ways of knowing, viewing each as “legitimate in its own right” (legitimated by invoking different criteria of validation in each case)—2014, p. 582). However, they suggest that the encouragement of this parallel approach *may not necessarily lead to people’s learning* across the different knowing systems. Finally, they refer to what they consider to be a preferable approach to working with different styles of knowing (and conceptions of its validation), namely, “the *co-production of knowledge*” (2014, p. 582, my italics). This involves people engaging in dialogue with one another, and collaborating in deciding how to develop synergies across the knowledge systems. (This can be argued to be the approach encouraged by Kaschula et al. in the example discussed above, where the idea was to develop a workable way forward through using the research to bring together the different

Foregrounding Critical Systemic and Indigenous Ways of Collective Knowing

knowing systems.) What is important to focus upon in this third approach is the quality of the interaction among knowledge systems, so that none of them comes to dominate the other by claiming a better way of being able to address the issues under consideration. To this effect Tengo et al. note that cross-cultural workshops, where participants are made aware of different ways of developing and validating “knowing” and can talk across their perspectives so as to learn from one another, were established by IPBES (2014, p. 582).

Tengo et al. note that the challenge of validation has been a continuing problem for the social sciences, but that historically in practice “an overly narrow understanding of what constitutes valid scientific practice” has prevailed. This has, for instance, “led to the detrimental exclusion of knowledge produced by local scientific practices from official forest management and forest policy in the US” (2014, p. 583). In the context of interaction between (Western) science and other knowledge systems, this has meant “a failure to capture the claims and perspectives of other knowledge holders ... and undermined the participation of different groups in decision making” (2014, p. 583). They argue that there are a myriad of contexts in which this failure to capture/accommodate alternative knowing systems has led to deleterious consequences (in terms of human-environment interactions). They thus plead for an approach (which they offer in the paper) for “stressing the importance of grounding collaboration on an equal starting point”, with a view to developing synergistic understanding “across knowledge systems” (2014, pp. 583-584).

Tengo et al. indicate that in the intersubjective approach that they espouse, validation becomes organized in terms of what Kvale (2002) calls “communicative validity”, in which, as they note, “the validity of knowledge claims is tested in a dialogue with informants and peers” (2014, p. 884). What is also important, one may add, is that—as Mugadza (2015) suggests—the quest for truth or falsity becomes sidestepped here as the aim is rather to define, with others, what “could be” in terms of designing our relationship with the world. Mugadza states that it “this logic that informs design” (2015, p. 3). This focus on looking at the web of life as *in the process of becoming based on how we see and act in it* ties in with Kvale’s (2002) elucidation of a pragmatic conception of validity: this is arguably an extension of the notion of communicative validity, in that action options are co-created as people mutually define (and imagine) options for what is possible—see Romm’s discussion on this (2015a,b).

Returning to Tengo et al.’s exposition, they indicate that it is the communicative notion of validation (as proposed by authors such as Kvale) that was generated and nurtured in the cross-cultural workshop referred to earlier. What is important, they suggest, is to “embed an ongoing cross-cultural practice across the world” (2014, p. 584). Here they echo the plea expressed by, for example, Harris and Wasilewski (2004) and Goduka (2012), for an open dialogical space as the only way of fruitfully being able to connect diverse knowledge systems for “enhanced ecosystem governance” (2014, p. 579). Tengo et al. see the IPBES as having made important steps in this direction, which can be strengthened and carried over to other policy-making arenas.

Foregrounding Critical Systemic and Indigenous Ways of Collective Knowing

What all these authors as cited in this section underscore is that the drive towards what McIntyre calls “expanding markets based on extracting profit from workers and the environment” (2014a, p. 10) *has to be questioned by invoking alternative ways of envisaging the world and our place in it*. This also means that in the development of processes for enhanced ecosystems governance we have to be mindful, as McIntyre reminds us, that “the environment is primary and that designs need to ensure that they protect the web of life, rather than pitting profit versus the planet systemic ethics” (2014a, p. 10). To take this on board in effect means foregrounding what many Indigenous and Indigenous-oriented authors have repeatedly stressed, that we cannot but orient to taking seriously our stewardship responsibilities to care for “mother earth” (and all our relatives on earth).

CONCLUSION

As stated by Owuor (2007), the word *Indigenous* has often been used to refer to “specific groups of people defined by ancestral territories, collective cultural configurations and historical locations” (2007, p. 22). Goduka notes, though, that this does not imply a static view either of Indigeneity or of the “knowledge” that becomes created in Indigenous communities. Indeed Goduka suggests that IK “evolves in situ and is dynamic and creative, constantly growing and adapting to meet new conditions” (2012, p. 3). She suggests that we consider IK as “cultural knowledge in its broadest sense”, that is, in the sense that it “is embedded in a dynamic system in which spirituality, kinship, local politics and other factors are tied together and influence one another” (2012, p. 3). This understanding of IK focuses on its being rooted in a particular community or culture, but does not preclude communication across cultural heritages, insofar as the intention is to “experience the world as a whole, recognizing the inherent rights of other people and beings and living accordingly” (as Lowan-Trudeau puts it, 2014, p. 356).

In this paper I have argued that what is problematic is when Indigenous understandings of the connectedness of all living and non-living things is ignored in the quest for what Harris and Wasileski (2004) call “power and profit”. I have focused on drawing out aspects of Indigeneity (as expressed by various authors) that imply an orientation of caring for others and for “Nature”. I have not tried to deal with the question of whether all Indigenous communities would subscribe to this orientation to the same extent. In the context of Africa, as Quan-Baffour and Romm point out (2015), African humanism is itself in a process of re-invention as Africans continually ‘read, challenge, [and] rewrite their discourses’” (Mudimbe, 1988, p. xi, as cited in Quan-Baffour & Romm, 2015). As Goduka also states, Indigeneity and what it implies in practice, is neither clear-cut nor fixed, but is a dynamic system of knowledge-production (2012). What I suggest is that the features of Indigeneity relating to “connectivity” or “selves-in-relation” can make place for what Lowan-Trudeau calls a “third space between Western and Indigenous ecological approaches” (2014, p. 354). Because the Indigenous worldviews as explicated in this paper embody a deep (emotion- and value-based) appreciation of the connectedness of the web of life (as also understood within versions of critical systemic thinking), I have proposed that

Foregrounding Critical Systemic and Indigenous Ways of Collective Knowing

we need to foreground Indigenous—and Indigenous-oriented—ways of understanding our stewardship responsibilities, while working collaboratively towards (re)directing the Anthropocene in the current era.

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