

8 POWER OF COLONIALITY AND A MOVE TOWARD JUSTICE

THE DARKER SIDE OF CLASSIFICATION: FROM A'NINANDAK' TO BALSAM FIR

I have tried to make the case that derivative positionality (within classifications) is an important mode of power in classifications. How one's identity (human and nonhuman alike) is positioned in a classification has material and aesthetic effects that radiate outward into social spaces. Position *is* power, I have tried to argue, and have tried to show how power emanates from the opaque and systemic qualities inherent in classifications. The more accurately an identity (of a person, a thing, an organism, and the like) is expressed or reflected in systems, the more we can see that system as being *just* in relation to a lived reality. We concluded chapter 7 with a section titled, "Divergent Traditions and Nameless Taxa," which emphasized the structural problems associated with phylogenetically derived classifications. Such genetic classifications pose structural, syntactic, and semantic problems, as they are not always matched with prevailing Linnaean nomenclature. This means that phylogenetic information is effectively precluded from systems that use binomial nomenclature as the primary collocating mechanism—which at present is most, if not all, of the classifications that dominate the discipline. The result is that two parallel methods of classification are being practiced, each producing valuable biological and ecological information, but their paths cannot cross or intermingle in any pragmatic way. Surely this is problematic. However, if we wished, we could hypothetically imagine hiring hundreds of taxonomists to apply

Linnaean names to genetically derived operational taxonomic units. The same cannot be said for some forms of knowledge that are ontologically or epistemically on different planes from the structures of Western science. So here we turn to the fundamental problem with *all* classifications within the colonial episteme.

The question of structural power goes well beyond the internal components of classification—which is to say, a classification’s technical specifications, policies, and practices—it extends outward to the epistemic structure of *how we collectively know what we know at all*. And herein lies the true clutch of power: for all our discussion of composite systems, their epistemic borders are defined by particular ways of knowing—Western ways of knowing. And these boundaries are nonnegotiable. This shouldn’t come as a surprise to anybody. By and large, the impulse, trajectory, and method of scientific discovery are distinctly Western practices. Historically, the genesis of natural history as a discipline—and later the biological sciences—was the imperial drive to collect “foreign” species from colonized lands, which were then collected, studied, and displayed within personal collections as cabinets of curiosities. Later these often-private collections ended up in museums, where the “control” of nature can be on full display (Findlen 1994, 153; Raby 2017, 207). Even the deeply influential thinking of Charles Darwin precipitated from British expeditions intended to survey the land, sea, and air in various permutations, in an attempt to create a more unified and global view of the natural world (Richards 1993, chap. 2).

I do not want to imply that the function of the Catalogue of Life was in any way meant to somehow solve the problem of coloniality—it simply cannot. All the Catalogue ever promised was to provide a mechanism for data control and transfer to facilitate access to the broadest extent of biodiversity knowledge available. But what is intriguing about a management classification is that it forces us to question the essential functions and problematics of standardized, normalized spaces. As written by Bengt Jacobsson, “Standards are created by groups of people who develop solutions which they regard as good for all concerned. . . . A significant feature of standards and standardization is that expert knowledge is stored in *rules*

and in technical solutions. Knowledge is transformed into rules that are abstract, general, and recorded in writing” (2005, 41). The more we universalize and aggregate, the faster we lose sight of local nuance and the further away “from nature,” or from the local site of empirical activity, our research and knowledge becomes. One cannot get more “local” than the indigenous groups forcibly relocated throughout the world. The conflict in the biodiversity taxonomic community with respect to management taxonomies is instructive for all of us that struggle daily to meet the needs of diverse constituents. It brings to light the core material and epistemic realities of our organizational work. The perennial question remains: Do we allow the knowledge of our world to remain fragmented to ensure local integrity, or force these systems together in the interest of global progress and international cooperation? Perhaps most will say that we can have both. If we do, then the Catalogue is instructive precisely because it displays the benefits and pitfalls of such an approach. We cannot, it seems, have our cake and eat it, too, however, even coupled with the technological capacities we have at our disposal. Neither approach is perfect—global aggregation or fully local systems—especially while there are largescale issues such as global climate change that require the aggregation of data. What I *can* say is that the solutions put forth by the Catalogue in terms of knowledge dissemination only make the need to push for more inclusive, anticolonial projects all the more pertinent. The cost for moving away from the local is that large-scale infrastructures only magnify the cultural harms that have historically been distributed, making it much more difficult to intervene and ameliorate these harms. Such is the problem with systemic power.

So, while in our contemporary world we see the endeavor of biodiversity science as a stream of inquiry driven by the pure pursuit of knowledge, it is impossible to divide these ambitions from the colonial impulse to collect the extraordinary—which is to say, to own the knowledge of foreign lands for the pursuit of local invention and exploitation. A discussion of structural and epistemic power cannot be complete unless we formally acknowledge these pervasive, historical qualities of classifications. And indeed, this colonial impulse remains even into the nineteenth, twentieth centuries, and twenty-first centuries, as evidenced by Megan Raby in

her *American Tropics: The Caribbean Roots of Biodiversity Science* (2017). As conveyed by Raby, “U.S. biologists became embedded in the networks of empire. . . . This came in many forms: interimperial solidarity with the British and West Indies, ties to the U.S. government power structures in Puerto Rico or the Panama Canal Zone, or reliance on land-owning U.S. corporations and private individuals” (2017, 216). A contemporary notion of biodiversity, then, cannot be severed from historical origins, ingrained as they are in regimes of power and global control.

It has been a long time coming, but the discipline of information studies and, more specifically, the subareas of classification and representation have been fortunate in having a host of scholars specializing in indigenous and post / decolonial thinking (Bone and Loughheed 2018; Corn and Patrick 2019; Duarte and Belarde-Lewis 2015; Littletree, Belarde-Lewis, and Duarte 2020; Montenegro 2019). As characterized by Duarte and Belarde-Lewis,

Broadly, colonization—the verb, or enactment, of colonialism—is based on four overlapping mechanisms: (1) the classification of diverse Indigenous peoples as a single lesser-class of sub-humans deserving of social subjugation at best and extermination at worst; (2) the theft and settlement of Indigenous lands and social spaces by an elite Settler class; (3) the articulation of institutions to support this class system and the elite control of the environment; and (4) the disciplining of elite forms of knowledge through the marginalization of Indigenous. (2015, 682)

Expanding on the fourth quality of colonization, then, let us examine the hold that coloniality has on the process of classification and representation in the biodiversity taxonomy. In light of this, a central goal in deconstructing the power of classification systems is to imagine ways by which we can break free from the colonial constructs that preclude the inclusion of knowledge that falls outside its epistemic boundaries. This problem must go beyond merely pluralizing the classificatory record; it forces us to imagine what it means to acknowledge these colonial harms and envision ways of designing systems that ameliorate these harms. And to a certain extent, perhaps this may not be wholly possible—there will never be one system

that can attend to all cultures, and I seriously doubt we can design a system in the West (or anywhere else, for that matter) that is completely unburdened from colonial modes of knowledge. In these cases, then, we have to design systems that actively distribute power back to the cultures that were exploited for their indigenous and endemic knowledge.

In information studies, Hope Olson is recognized for reminding us that subject representation in library systems matters, and that language is both a necessary vehicle for access and a homogenizing agent that obstructs subject complexity in smoothly functioning systems that construct seamless classificatory realities (Olson 2002, 238). But even in Olson's sense, however we might express the relationship of a "subject" to its represented "lived complexity" in language, these expressions are still expressed from within a fairly limited epistemic framework. Our goal with classification, in general, should not be to merely expand the universe of subjects to widen a classification's expressive capacities (though that is certainly a good start!); we should also push to define our methods and theories in new terms—away from the univocal narrative that these classifications have represented for far too long.

The co-opting of knowledge from indigenous tribes, for example, has historically been gift-wrapped in discourse that presents these "communicative" actions as a worthy and ethically sound expansion of our collective knowledge. The assumption is that we are the better, scientifically and socially, for being inclusive to alternative forms of knowledge. However, what we often fail to realize is that, historically, the modes in which we collect this knowledge, and the information structures that we embed it within, erase any supposed "progress" we might make to expand and pluralize the boundaries of our collective intellectual spaces.

A case in point is the US effort to collect indigenous knowledge through ethnographic means in the late nineteenth and early twentieth centuries. A key moment in this push to collect indigenous knowledge was the establishment of the United States Bureau of Ethnology (BE) in 1879. The bureau's initial goal was to manage the archival materials produced by the US Department of the Interior, which included an increasing number of ethnographic surveys of indigenous tribes dating from 1867 to 1874

(Woodbury and Woodbury 1999). By 1894, however, in acknowledgment of the geographic scope of the bureau, its name was changed to Bureau of American Ethnology (BAE); under the direction of John Wesley Powell, it began to more concertedly embark on organizationally funded ethnographic work, especially emphasizing the documentation of the American tribal languages. Over time, the scope of the project expanded to include a fairly broad range of collected knowledge, including religious and ceremonial practices, mythology, burial practices, art and metallurgy, textiles and pottery, music, and architecture. The data from these long-term expeditions and ethnographic studies were published in the *Annual Reports and Bulletins of the Bureau of American Ethnology*, which, although relatively little-discussed today in IS, still remain a crucial historical repository that expresses the powerful colonial impulse for the appropriation of knowledge. For our purposes, the ethnobotanical and ethnozoological surveys are of particular significance, because they give us a very clear picture of how detrimental the “translation” of native knowledge into Western forms truly was.

In an article titled “Use of Plants by the Chippewa Indians” (Smithsonian Institution Bureau of American Ethnology 1895, 286), written by ethnomusicologist Frances Densmore, we can see how the bureau collected the native names of plants, documented their usage, and then mapped those indigenous names to the common and official scientific binomial then in use by the scientific community (see figure 8.1). In figure 8.1, we can see Densmore’s documentation of *a'ninandak'*, which has been mapped to the balsam fir, *Abies balsamea* (L.) Mill (which, incidentally, is still the accepted scientific name for the balsam fir). Alongside these entries, we see specific notes about *a'ninandak'*, regarding how the Chippewa used this plant for medicine, food, and utility, as well as cross-references within the *Bulletins* that show how other tribes in the area also used these items. Pages and pages of entries follow, listing the specific plants used for medicinal purposes, as well as the active chemical agents within these specimens that contributed to these pharmacological effects. A huge boon to US pharmacology to be sure, which Boaventura de Sousa Santos and Vandana Shiva (2008) make clear in their discussion of the colonial act of patenting of biodiversity as a mode of biopiracy.

LIST OF PLANTS ARRANGED ACCORDING TO BOTANICAL NAME

Botanical name	Common name	Native name	Meaning	Use	Reference to use by other tribes 1
<i>Abies balsamea</i> (L.) Mill.	balsam fir.	a'ninandaak'		medicine (headache)	
<i>Acer saccharum</i> Marsh.	sugar maple.	a'nina'tug.		food, utility	
<i>Achillea millefolium</i> L.	yarrow.	a'djidamo'wano.	squirrel tail.	medicine (headache)	swelling, etc., Winnebago, 33d Rept. B. A. E., p. 134.
<i>Acorus calamus</i> L.	calamus.	w'kèr'.	something flat.	medicine (cold, etc.)	fever, cough, etc., 33d Rept. B. A. E., p. 69.
<i>Actaea rubra</i> (Ait.) Willd.	red baneberry.	mùkosijsa'bostigùn.	hay purgative.	charm.	
<i>Agastache anethiodora</i> (Nutt.) Britton.	giant hyssop.	w'cosidj'ibik.	drawing root or plant.	medicine (diseases of women).	
<i>Allionia nyctaginea</i> Michx.	umbrella-plant.	weza'wùnikwùk'.	yellow plant.	medicine (cough and pain in chest).	
<i>Allium stellatum</i> Ker.	wild onion.	be'tukadaak'igisin.	"it sticks up"	medicine (sprain)	113.
<i>Allium tricoccum</i> Ait.	wild leek.	mùkòde'cigaga'wùnj.	prairie skunk plant.	medicine (colds)	food, 33d Rept. B. A. E., p. 78; fracture, Sioux, Bull. 61, p. 261.
<i>Alnus incana</i> (L.) Moench.	alder.	siga'gawùnj'.	onion.	medicine (diseases of women), dye.	
<i>Amelanchier canadensis</i> (L.) Medic.	shadbush.	wadùb'.			
<i>Anaphalis margaritacea</i> (L.) B. & H.	pearly everlasting.	guzigwa'kominaga'wùnj.	thorny wood.	medicine (dysentery, diseases of women), food.	
<i>Andropogon furcatus</i> Muhl.	bluestem.	wa'bigwùnj.	flowers.	medicine (paralysis)	
<i>Apocynum</i> sp.	dogbane.	mùkòde'kanés.	small prairie.	medicine (indigestion)	fever, etc., Omaha-Ponca, 33d Rept. B. A. E., p. 68.
<i>Apocynum androsaemifolium</i> L.	do.	béba'mokodjibika'gisin.	"bear root, it is found here and there."	medicine (cough)	
<i>Aralia nudicaulis</i> L.	wild sarsaparilla.	sasa'big wan.	bear entrails root.	medicine (heart palpitation, earache, headache; a baby's cold; also for charm).	
		ma'kwona'gic odj'ibik.		medicine (remedy for the blood, also applied to a sore), charm.	
		wabos'odj'ibik.	rabbit root.		

Figure 8.1

"Use of Plants Arranged According to Botanical Name," by Frances Densmore. Annual Report of the Bureau of American Ethnology to the Secretary of the Smithsonian Institution 44th (Smithsonian Institution Bureau of American Ethnology 1895).

The organizational context for the collection of this knowledge was, to put it mildly, tinged with the darker intents of these expeditions. Top US anthropologists were recruited by the BAE under the premise that the “settling of the West would bring an inevitable end to the primitive lifeways [of American tribes] that had remained unchanged throughout the centuries” (Woodbury and Woodbury 1999, 285). And even worse, when the bureau was founded, John Powell’s initial task was to classify the US Indian tribes according to levels of “cultural sophistication” (Woodbury and Woodbury 1999, 284). Powell, subscribing to the theories of Lewis Henry Morgan, categorized all US native tribes as “savage” in the taxonomy of human advancement, with the exception of the southwestern Pueblo peoples, who were graced with the classification of barbarism, one notch above savagery. That this was the common characterization of US native peoples is secondary to the fact that there is no historical contingency imaginable that merits this kind of cultural subjugation. The collection of knowledge was less about the epistemic expansion of knowledge and more about the collection of knowledge-as-resource that was quickly dissipating because of the damaging US policies that were to eventually (nearly) eradicate the widespread existence of native knowledge. The knowledge, translated, was integrated into, and became property of, the US episteme as conveyed through governmental organizations.

And indeed, as we might guess, this explicit imbalance of knowledge power is expressed in the bureau’s classification of indigenous knowledge itself, which falls into the trap of Western scientific knowledge forms. As Wendy Geniusz (2009, 6–7) notes, “Although the Anishinaabeg [in English, the Chippewa, Ojibway, Ojibwa, or Ojibwe] have stories, religions, music, and botanical information, these are not the extremely specialized narrowly defined categories of non-native scholarly work. Within the Anishinaabeg cultural context, one does not ignore information in one of these categories in order to concentrate exclusively on another.” The reductionist model that much of scientific activity depends on is counter to the holistic, intersectional, and temporally contingent constitution of knowledge within indigenous cultures. Such a fact is true in many contexts, even beyond the Chippewa, for we see the importance of story in indigenous

cultures throughout the world. So, when Hope Olson declares that naming *matters*, the kind of names she refers to (that of the subject within catalogues) are of no great consequence in the world of indigenous tribes. Joeliee Seed-Pihama (in Archibald, Lee-Morgan, and De Santolo 2019) describes how names in Māori cultures are important, yes, but perhaps one's name is less important than the story of where it is from. And when a name is important, context is everything. "Our genealogical connection with all phenomena in the universe intricately interlinks us," Seed-Pihama states, "much like a spider web. Therefore, Māori never act and see things on an individual level" (Archibald, Lee-Morgan, and De Santolo 2019, 107).

Of course, names in biodiversity also have a context that is important, but that context is also derived through traditional scientific practices. To manufacture a taxon concept, as we saw, is to invoke a whole host of sources that bring that concept to life. These concepts are ultimately tied to nomenclature, which makes them tractable in discourse and databases. But Seed-Pihama's sense of context is far more contingent, historically attuned, and intermingled with use, place, and cosmological identity. We see inklings of this understanding in the *Bulletins* as well. Frances Densmore continues her narrative about the Chippewa by saying,

There is no exact terminology of Chippewa plants, although there are some generally accepted designations of common plants and trees. In obtaining the names of plants it was found that the same name is often given to several plants, and that one plant may have several names. Individuals often had their own names for the plants which they used as remedies. It was also customary for a medicine man, when teaching the use of a plant, to show a specimen of the plant without giving it any name. (Smithsonian Institution Bureau of American Ethnology 1895, 297)

We can see how the way we understand *relationships* between terms in classifications is fairly limited when juxtaposed with the complex associations of names and organism designations within the Chippewa culture. How does one convey a story and its multifold semantic relationships in classification space, for example? And to be fair to any one classifier, at the present we can't technically program our systems to accept these extra-epistemic

associations, especially if our culture fundamentally (historically and on contemporary terms) fails to see them as significant to the understanding of the natural world. In a statement that will forever resonate with me, Seed-Pihama unknowingly echoes Olson when she states, “The renaming of our people was intentional and purposeful on the part of the colonizers. The *power to name*, or rename, is a specific kind of symbolic violence and power that superimposes and defines what is seen as accepted as normal and legitimate within society” (Archibald, Lee-Morgan, and De Santolo 2019, 117; emphasis added). The “power to rename”—and to rename over and over and over—should be the new mantra of IS scholars examining colonial and imperial appropriation of knowledge.

Acts such as this appropriation of knowledge (renaming in its own right) is what Walter Mignolo was critiquing when he published *The Darker Side of the Renaissance* (2003) and *The Darker Side of Western Modernity* (2011). In both of these texts, but especially *The Darker Side of the Renaissance*, Mignolo points to the impact of colonization on our modes of knowledge production. Part and parcel with the process of colonization was the representation and documentation of the indigenous “other” into forms that conformed to Western standards—a standardized form that expresses what Mignolo later calls the colonial matrix of power. This is not altogether surprising given that, according to Mignolo, “the organization, evaluation, and transmission of a *set* of events as *historical* events are in large scale dependent upon the rhetorical restrictions of narrative genres as well as on the skills of the person narrating them, in oral or graphic form” (Mignolo 2003, 178; emphasis original). If indigenous ways of knowing do not align with the epistemic orientations of the classifier, then it is impossible for us to expect that the outcome of the process of classification would be anything other than suppressive to more nonlinear and associative ways of knowing. Indigenous knowledge in this sense is conditional. As Johanna Drucker writes, “A conditional document is not a speculative one, not imaginative or imagined, but is produced by protocols and processes that use structured conditions as a way to run, operate, select information, and display it” (2014a, 25). If narrative, historicity, and atemporality partially define an indigenous way of understanding and identifying nature, then

we cannot expect to do knowledge justice in structurally absolute and categorical hierarchies. The shadows of colonialism will always be present in our forms of knowledge, unless we redefine our practices with radical new ways of expressing connectivity.

As Linda Tuhiwai Smith notes in her influential *Decolonizing Methodologies* (2012), the Western notion of research implicitly distances the “human” from the process of empirical examination. To examine nature, we measure it, weigh it, and rely on other empirical variables to understand how the object of interest somehow relates to intellectual aspects of our social world. The human stands apart from nature, but is always, in the end, at the center of its annunciation and distribution. Deductively disembodimenting the components of nature merely to reassemble them in classificatory structures is an act that’s foreign, and in some sense violent, toward the more holistic and harmonious understandings of nature that are present in indigenous societies. In Marisa Duarte’s *Network Sovereignty: Building the Internet across Indian Country* (2017), the author shows the complex and reciprocal relationship between information communication technologies and indigenous cultures and how the imposition of these technologies requires the rearticulation of indigenous values as well as a decentering of Western practices toward the decolonization of indigenous lands, people, and knowledge. To partly frame this analysis, Duarte invokes a coloniality of power analytic that shows how classifications, institutions, space, and knowledge connect in a circular pattern of authority that slowly degrades the epistemic authority of indigenous cultures (2017, 18–25). The framework illustrates how power is systemically derived and distributed, and also how that power becomes part of indigenous thinking, thereby maintaining imperial and colonial power by reformulating the epistemic commitments of indigenous communities with the values and practices of Western culture. The story of the dingo conveyed earlier in this book describes exactly why: even while the government allows toxic baiting, indigenous populations wish to save the dingo as sacred, integral to their cultural storytelling. Yet in order to offset and push against these realities, indigenous communities must enter the discourse of Western politics to remedy any ill effects of dingo legislation. These are the stories we need to attend to more

as we push for widescale biological species conservation in light of global tragedies such as climate change. In practice, we have to engage with decoupling method from design—is it possible to design with new methods that push against prevailing normative and destructive colonial frames? To narrow the gap between the design of systems and their usually violent implementations, such that local communities have a say in how they are expressed.

As classification designers, we need to prioritize better understanding these darker colonial, Western, and imperial realities reflected in the narratives of classification and representation. But we cannot only acknowledge them, we must devise new ways of representing knowing, order, and disorder. We can never attain the true extent of epistemic justice until we reckon with these historical realities. If we cannot set aside our imperial scientific foundations (and I am not sure that this is even a feasible action) or integrate information in more culturally sensitive and humane ways (and I certainly think we can and must), then we need to fundamentally reformulate how we envision our current forms of taxonomic knowledge. We need to locate means of representing more complex, conditional, and networked ways of knowing, rather than ones of hierarchy and determinacy that necessarily express power imbalances. Our narratives should re-center processuality and indeterminacy as a narrative technique, particularly because it can help users of biodiversity information understand that taxonomies, while informed, are not static and free of divergent opinions. And even if we can't eschew ourselves of taxonomic hierarchies, given the limitations of our technologies or graphical spaces in general, then we need to introduce mechanisms that reveal transparency where there is opaqueness, and contingency where there is rigidity.

For these reasons, more often than not, I side with Maurizio Ferraris and Richard Davies when they embrace and advocate for richer ontologies and the exemplification of *more* objects over a more stripped-down parsimonious view of the world (2013, 15–16). If we do this in the domain of classification building, what we initially lose in precision we can gain in diversity. Is not the documentation and emergence of new, more comprehensive forms of knowledge an avenue toward a more precise informational

world, in any case? Let us redefine precision. If we embrace the reality that, when we *design* systems, we are also constructing ways of being in the world, then perhaps the stakes of our intellectual work will become more apparent, and these stakes will begin to influence our practice (Escobar 2018, 4).

PLURIVERSALITY AND DESIGN

Attempts to bring pluriversality into practice have been slow in coming—partly because such approaches sidestep the problem of facilitating what we’ve been calling global communication—and certainly some of the aims of this communication are worth pursuing! Climate change is real, and the solutions for such a phenomenon are global and not local. But nonetheless, such a reality does not mean that, in tandem, we cannot pursue a plural, classificatory ideal. At the center of this book has been a composite method of classification. This mode of organization is spurred, at least primarily, by the increasing rate of biodiversity data being produced around the world. However, for all we have gained in terms of a global view, these structures also remove taxonomic knowledge from the local site of production and have not yet fully realized how to maintain that global-local connection. While we want our data to represent the global, we have to push against the simultaneous reality that it is also being globalized, in the capitalist sense that global gains come at the cost of local communities and their well-being.

Within this context, I am defining pluriversality as the embrace of many classification authorities, and positing that propagating the many is more valuable than manifesting the universal singular. Speaking within the context of political universality, Judith Butler notes how, “the use of the doctrine of universality” has been invoked “in the service of colonialism and imperialism” (2000, 14–15). As has been indicated on numerous occasions in this book, universality (as evidenced in classifications, both traditional and composite), whether purposeful or not, acts as a passive tool of knowledge control and, by extension, a mechanism of intellectual and social power. “The fear of course,” remarks Butler, “is that what is named as universal is the parochial property of the dominant culture, and the ‘universalizability’ is dissociable from imperial expansion” (2000, 15).

The ramifications of this kind of embedded colonial and normative power, while certainly detrimental and violent within the social sphere, have proven particularly devastating to the natural world. The 1992 United Nations Rio Declaration also identifies the importance of indigenous knowledge and the need to reverse these colonial erasures. Article 22 states,

Indigenous people and their communities and other local communities have a vital role in environmental management and development because of their knowledge and traditional practices. States should recognize and duly support their identity, culture and interests and enable their effective participation in the achievement of sustainable development. (Convention on Biological Diversity 2006, article 22).

We cannot continue to see ourselves as apart from the world of nature, climate, and environment, and continue to couch these phenomenon as if they are “happening to us.” They fundamentally *are us*, not only because we caused them (though that is also true), but because we, literally, cannot live without them.

In *The Disorder of Things*, John Dupré advocates for what he calls a promiscuous realist approach to classification. To subscribe to promiscuous realism is to hold a “radically ontological” pluralist claim that there are “many equally legitimate ways of dividing the world into kinds” (Dupré 1993, 18, 11). Dupré notes, “I can see no reason why commitment to many overlapping kinds of things should threaten the reality of any of them. A certain entity might be a real whale, a real mammal, a real top predator in the food chain, and even a real fish” (1996, 262). The danger of such an approach is obvious: we, of course, know that not everything is legitimate—after all, the International Flat Earth Research Society is a thing in this world some people see as legitimate. And in some cases, the beliefs of the few can come at the cost of the many: the increasing number of anti-vaccination supporters promises to continually extend what has been a horrendous and deadly COVID-19 global pandemic. To embrace classificatory plurality is not to eschew the concept of rightness and justness. To be pluriversal is to embrace a process that strives to better understand divergent modes of *knowledge production*, not necessarily

all said knowledge that these accepted processes produce—a nuanced but important difference. Every culture has their epistemic standards. Mignolo writes,

Pluriversality (or diversity, in the sense of diversity and not in the sense of dichotomy) is not the rejection of universal claims. It rejects universality understood as abstract universal grounded in mono-logic. A universal principle grounded in the idea of the diversal (or pluriversal) is not a contradiction in terms, but rather a displacement of conceptual structures. Diversity as universal is . . . a world composed of multiple worlds, *the right to be different* because we are all equals. (Mignolo 2011, 234–235; emphasis original)

In this book I have discussed process theory, for example, and how the process of dividing nature into entities such as species taxon concepts is tantamount to imposing order and boundaries where it otherwise does not exist. To embrace pluriversality in this broader way is to acknowledge, on the one hand, that we *must* manufacture entities in this way—this is how we think, the way we construct language and function semiotically, and also how we will combat large scale catastrophes that science must continue to inform—but, on the other hand, we also have a responsibility to balance this process of compartmentalization by adopting and implementing technical mechanisms that convey the limitations of said knowledge within certain use contexts. Again, the Catalogue, on the face of it, is worthwhile, but the problem remains that its infrastructure is not fully able to directly and explicitly convey its limitations to nonexpert users.

One way this transparency can be implemented is by practically activating what Arturo Escobar calls a “radical relationality” (Escobar 2020, xiii). Classifications should be cohesive but also attend to local conditions as needed—and the mechanisms for such transformation should be visible and alterable. A radical relational approach is one that posits that all entities (human and nonhuman) are “so deeply interrelated that they have no intrinsic, separate existence by themselves.” What we separate, we can again link together into a cohesive unit. So a deeper question becomes, How can our taxonomies present themselves as a unified whole, while also expressing the multiple other arrangement that ostensibly could be? This is important,

not for the biodiversity scientists who understand the hypothesizing nature of their craft, but for the general public, who are not qualified or acquainted with biological taxonomy enough to question the arrangement of any one structure. As previously mentioned, ontologies are certainly one way we can come close to modeling multidimensional relationships, though even these models are limited, based on intended use and function and not without their own drawbacks, as Nico Franz has outlined (2010).

Jens-Erik Mai embraces a similar approach in his “The Modernity of Classification,” when he says, “Plurality is not something that can be set aside as simply something that has do with culture, society and language, but it is also something that has to do with the individual. What is most important, and, perhaps its most enduring quality is of locality: justice to the particular, the specific, the located” (2011, 723). To embrace plurality is to push against the ongoing debates about what constitutes right and wrong mechanisms for the organization of entities. This seems to me a much more practical way of understanding the potentiality of classificatory spaces. If we see classifications as the contingent mechanisms they are, they have far less power over the definition of our identities and our (and other entities) situated place in the world.

The difficulty is, and always will be, imagining how pluriversality is to be translated into the *design* of systems. This problem of implementation comes with no obvious solutions. One way forward, perhaps, is to imagine a system that defines the success of usability not as consistency, speed, and accuracy (whatever these may mean in practice within a particular context), but rather as flexibility, care, and the active display of responses that emphasize context and difference. Information philosopher Kay Mathiesen’s (2016) work provides a nice jumping-off point for such an approach. To attain informational justice, Mathiesen argues, we must account for three basic forms of i-justice: iDistributive justice, iParticipatory justice and iRecognitional justice. The premise is that information systems should allow for the equitable and fair distribution of information; that the environment for system design should allow for collaborative and shared decision making about what is best for any individual or group; and that the information in said system should justly represent members of society. In

light of this, we can see another reason that large-scale infrastructure often falls short of its epistemic responsibilities: it is too far removed from the constituents of interest. Once again, the local provides avenues for more robust collaborative and community integrative mechanisms.

The first step, it seems to me, is to acknowledge that, if our representation systems have material effects on the social world, then the solutions that we apply to our social spaces should also be reflected in the systems we create. As we grapple with rising temperatures and declining biodiversity, we know that unless we change our daily practices (and corporations are forced to implement large-scale change), the future of our society is doomed to fail as our ecological spaces crumble. The colonial, industrial, and capitalist epistemes that we have long subscribed to are now being seen for the detriment that they are. And, as such, we should equally see that the intellectual frameworks, tools, and repositories of knowledge that have supported these initiatives must be dismantled and rebuilt. If we have to change our practices in the environment to meet the challenges these crises present, then we must also change the space of systems that make it so. This is why Lefebvre's triad is so important. *All* space is connected—from the material, to the represented, to the imaginary, and back again.

I see some promise in transitional discourse approaches to design, which principally note the deep connection between the environment and social spaces, and take this reality as a jumping-off point to resituate how we must radically transition our practices to ones that are environmentally sustainable—especially if we understand this model as the practical implementation of Mathiesen's model of informational justice and the design ethic that build's off Ostrom's SES examination of multicomunity systems that was introduced in chapter 3. "Transitional discourses," Escobar notes, "take as their point of departure the notion that contemporary ecological and social crises are inseparable from the model of social life that have become dominant over the past few centuries, whether categorized as industrialism, capitalism, modernity, (neo)liberalism, anthropocentrism, rationalism, patriarchy, secularism, or Judeo-Christian civilization" (Escobar 2018, 139). To acknowledge that we, as well as the environment and the systems that support it, are in transition is to expect that no radical

change to the system is going to happen overnight. Rather, change is emergent and iterative and reveals itself in the process of redesigning our systemic potentials.

In *Designs for the Pluriverse: Radical Interdependence, Autonomy, and the Making of Worlds* (2018, 152–164), Escobar outlines the transition design framework at Carnegie Mellon University’s School of Design. The design program, focused as it is on producing “system thinkers” that integrate exceptional change in real-world design applications, focuses on design of and within new paradigms. Particularly useful, I think, is the four-stage Transition Design Framework that lays out the process involved in such an approach (see figure 8.2). Stage 1, Visions of Transition, requires a clear articulation of a particular need at hand within society, including, among other areas, a formulation of “information culture” such that it is more in harmony with our surrounding ecosystem; Stage 2, Theories of Change, supports the integration of many fields to better understand the dynamics involved with the particular transition at hand; Stage 3, Posture and Mind-Set, pushes for the individual reconceptualization of the possibilities within design, ones that involve the broadscale integration of multiple voices and collaboration; and Stage 4, New Ways of Designing, involves implementation of new systems and the realization that such implementation is iterative and dynamic. What I find most appealing about this approach is that, although transition is disruptive, it need not occur at a rate that destroys the credibility of a system. And further, the design framework works at a scale that would work exceedingly well at the local level of implementation.

What the framework facilitates is a multidisciplinary approach to classification building that embraces the authority of many varieties of expertise. For example, if we look to the design of a biological taxonomy, we can envision the collaboration among taxonomists, ecologists, ontologists, information scientists, and digital humanities and representational experts, as well as the community members who represent diverse epistemic orientations. This kind of experimentation is essential. Importantly, this is not a mechanism by which we can circumvent the expertise of any given taxonomists—quite the contrary, in fact. The goal here is rather to design systems that formally display the nuance of their hypothesizing work, both on an individual level and in relation to the entire field of taxonomic

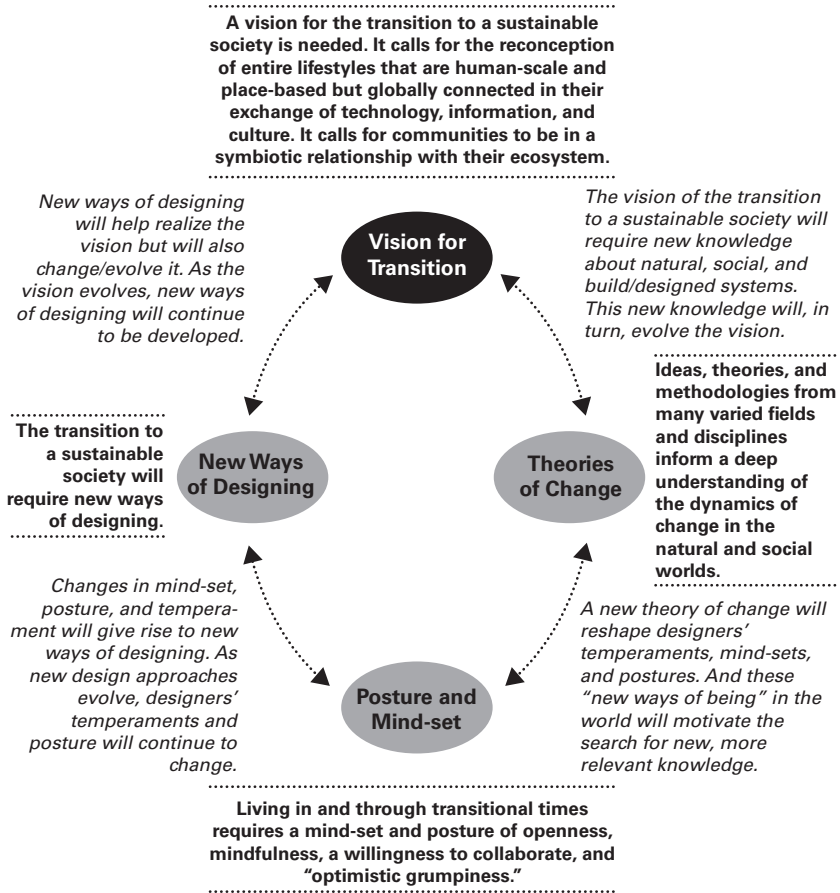


Figure 8.2

"CMU's Transitional Design Framework" (Escobar 2018, 155).

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practice. The result of transition design is that it embodies "not just the communion of people, their artifacts, and nature, and will come into being at multiple levels of scale" (Escobar 2018, 155–156). Working within this framework, taxonomies can be produced within the context of an intersectional world with many competing levels of interest.

But while the transition design framework is strong theoretically, what it lacks is a clear mechanism by which we can deconstruct a system such

that we can reimagine its parts in new, combinatorial ways. If we look back to our discussion of the social-ecological framework (SES) as advocated by Elinor Ostrom (2009), we can begin to see how such a transitional reimagining might be possible. In some ways we might see this book itself as enacting a kind of Ostrom-esque deconstruction of a system. We have discussed the epistemic boundaries of classification, the entities that make up the ontological reality of the system, and the new taxonomic epistemic arrangements—such as composite systems—that push against the prevailing assumptions typically associated with these activities. The next step is to imagine these component parts transitionally, positing radically new technical and intellectual ways by which instantiating and classifying nature are possible, as well as imagining how the entities we instantiate can be recombined in anti-normative ways.

One of the greatest benefits of the SES framework is its emphasis on the social components of a given system, integrating models of ethics, justice, positionality, and community. By understanding the components of the broader taxonomic landscape, and the benefits and ill effects it has in the lived world, one can begin to see how design is paramount to the production of science. And the SES approach does not change the taxonomic science, but rather sheds light on the social processes that limit its full potential in domains outside biodiversity science and systemics. If we understand the social components of taxonomic work, then we can gain an understanding of who should be involved in the iterative transition design. The next steps toward the future of classification practice are ones geared toward justice and environmental benefit.

CLASSIFICATION AS ENVIRONMENTAL AND ECOLOGICAL JUSTICE WORK

Part of a new, transitional mode of thinking is accepting that *everybody* (person and organism, alike) has the foundational right to control how their identities are represented in a system. We must acknowledge that classifications are not inert tools, but active epistemic formulations that carry cognitive and affective weight in the world. I want to end this chapter with

the notion that, going forward, just as classification work has been framed within the IS domain as an expression of social justice work, the work of biodiversity taxonomists shows how such knowledge systems are also directly engaging with environmental and ecological justice work. If we are to emphasize justice as a crucial aim of the information professions (and I think that we all should orient ourselves toward this directive), it is incumbent on IS professionals to imagine new classificatory frontiers to better understand our impact in all disciplinary spaces. This is to say once again that, for classifications to be *just* entities in the world—fair to the individuals and groups that they represent, as well as morally restorative—they must attend and adequately respond to Miranda Fricker’s (2009) injunction against epistemic injustice. Classification and representation systems should support one’s pursuit to better conceptualize their position and experience in society and, by extension, should also provide true information that then increases one’s capacity and credibility as a speaker. Similarly, that information should support attempts to radically intervene into our ecological processes, such that we reduce our impact on the environment, as well as eradicate the injustices that all living organisms are experiencing. Just as one has a basic right to live in a just world, all living entities should also have a right to access descriptive systems that represent that ideal justness. In short, information is formative, and foundational justice works on all levels.

This critical approach to classification is exactly what Jonathan Furner called for at the 2019 International Society for Knowledge Organization Annual Meeting in Porto, Portugal (Furner 2018). In, “Truth, Relevance, and Justice: Towards a Veritistic Turn for KO,” Furner advocates for a new priority in the knowledge organization domain—one that prioritizes truth over relevance as a core goal of classification builders. Furner’s new critical approach to classification and knowledge organization, then, focuses on three other goals, including embracing KO systems that are (1) informed by applied social epistemology, such that we interrogate the qualities and arguments that we, as KO specialists, use to justify what is true or false; (2) inspired with values of epistemic justice, in that we foster the dissemination of true beliefs; and (3) respectful of human rights, in that we recognize the need to respect and lend credibility to underrepresented groups that

have heretofore been overlooked by systems (which I take, in this context, to include the natural world as well).

In tandem with this, it is important to acknowledge that there are two sides to justice that must be addressed within these systems, at least as they apply to the domain of biodiversity studies as it intersects with classification production. On one hand, realigning classifications on the basis of truth promotes accurate, and that is to say culturally respectful and attentive, mechanisms to classify in ways that align with a variety of true beliefs. In this vein, we must acknowledge that implicit in this statement is the reality that there must be many ways in which the world can be seen as epistemically true. This does not mean, of course, that there are “alternative facts.” To say that we should prioritize truth is to also say that, as information specialists, we have a responsibility to say when someone is incorrect or proselytizing information that is unsupported by valid forms of evidence (however we define evidence in a particular context—even ones that are, potentially, antithetical to a Western epistemic notion of science). From an indigenous point of view, truth may be tantamount to a system that promotes balance between the social and natural world, for example, rather than one based on exploitation and nature-as-capital. Failing to attend to alternate views of justice within classification leads to community-specific modes of oppression.

Representational biodiversity systems that do not support underrepresented ways of knowing also facilitate environmental injustices. As defined by the United States Environmental Protection Agency, to be environmentally just means to support

the fair treatment and meaningful involvement of all people regardless of race, ethnicity, income, national origin or educational level with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no population, due to policy or economic disempowerment, is forced to bear a disproportionate burden of the negative human health or environmental impacts of pollution or other environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local and tribal programs and policies. (Institute of Medicine (US) and Health Sciences Policy Program (US) 1999, 1)

The connection between people and the environment goes well beyond a theoretical analysis of Alfred Whitehead, process theory, or socrionatural relations. The relationship is also practical. Within the information disciplines, especially those allied with science and technology and media studies, we understand how technological waste, for example, has adverse effects on rural, marginalized, and underdeveloped communities (Parks and Starosielski 2015; Iles 2004; Kellogg and Mathur 2003; Robyn 2002). Our physical, human bodies are part of the environment, and to think otherwise is to fail to recognize the drastic impacts environmental policies and regulations have on our sense of well-being and health. On top of the material connections between the environment and humanity, we must also acknowledge religious and cultural impacts. The dingo, for example, plays prominently in Australian indigenous creation myth. The dingo plays a central role in spiritual stories associated with The Dreaming, for example, which narrates the unfolding origin story of humanity that, in some reports, is born of the dingo figure (Smith and Litchfield 2009)—a metaphor for our current treatment of the dingo in the most egregious of ways.

Gordon Walker identifies four pillars of a critical environmental justice approach: (1) recognition that social inequality and oppression intersect in all human and nonhuman forms; (2) understanding that injustices happen at different scales—at the local and global levels, for example—as well as how the past influences the material present and how the present redefines the past; (3) recognizing that social inequities are systemic and reinforced by state powers; and (4) acknowledging that *all* bodies—human and nonhuman—are indispensable to our collective well-being and that we must fight against the dominant hegemonic forces of racism, colonialization, and other forces of social suppression (2012, 1). “Socioecological indispensability” is the broad term Walker uses to indicate the importance of *all* natural entities (human and nonhuman) as vital actors in the pursuit of all forms of justice, including social and economic. Environmental justice is a global issue and, as such, requires that information sources take into account multiple forms of global opinion (Walker 2012, chap. 8)—ostensibly what consensus classification might be seen as setting out to do, whether ideally or counter to professional preference.

Which leads to the second notion of justice that also must be attended to: a definition of justice that includes not only the harms performed to human actors, but those to nonhuman actors as well. If we are to say that classifications should facilitate an ethic of *truth*, then that truth should also be one that aligns with a nonanthropocentric, environmentally favorable view of the world. This approach requires us to also subscribe to ecological justice frameworks and be attentive to how classifications can potentially unfavorably burden ecological communities with or without human involvement. Discourses surrounding environmental justice are anthropocentric and focus on groups or communities of individuals that are sentient and can engage in social agreements about what is just in a given particular context (Garner 2013, 4). Garner notes that John Rawls, for example, failed to include animals in his framework because they lacked moral agency, or what Rawls called “the capacity for moral personality” (1999, 443). Rawls’s notion of justice is based on the notion of a social contract, which specifically excludes the realm of nature: “This wider theory fails to embrace all moral relationships, since it would seem to include only our relations with other persons and to leave out of account how we are to conduct ourselves toward animals and the rest of nature” (Rawls 1999, 15). Of course, although nonhuman natural organisms may have no ability (that we know of) to internalize or negotiate their own identities in systems, we do have a sense of responsibility to do so on their behalf.

Ecological justice is an approach that attempts to bring into discourses of justice a notion that nature, in and of itself, is a vital part of this social assemblage. David Schlosberg, incorporating the scholarship of Brian Baxter (2014), notes that one can imagine bridging environmental justice with the ecological worldview if we extend the notion of “community” and “claim that viable populations of merely living organisms [non-sentient organisms] have a right to environmental resources necessary for these populations to exist and survive” (Schlosberg 2007, chap. 5). In this way, the stakes for biodiversity and the consequences of its management are distributed (equally or otherwise) throughout all communities of living beings, regardless of whether one has entered into a contract that defines what is or is not just. In such a view, we have a responsibility to consider

nonhuman species as part of the decisions we make that equally affect their constitution, in both the present and the future. A community-centric approach also acknowledges that there are, in fact, a good deal of similarities between human and nonhuman organisms, and that such an approach allows us to recognize and empathize with the stakes for the nonhuman natural world (Schlosberg 2007, 133–134). For one, we need the same resources to survive—air, water, land, and the like—and that alone should extend the concept of justice beyond the realm of the human. As aptly stated by Martha C. Nussbaum, “Animals, like humans, pursue a plurality of distinct goods: friendship and affiliation, freedom from pain, mobility, and many others” (2007, 344).

Nature also has a sense of agency in that, when something is awry, we are well aware due to the expression of some systemic disruption. As a result of climate change, for example, nature responds appropriately by expressing itself through redistribution (or extinction) of species. And surely, whether we act as if it is the case or not, humans are not immune to such extinction events. Humans and nonhuman organisms exist within the same system and, to flourish, both aspects of nature must survive in tandem and each deserves “to enjoy the fulness of its own form of life” (Schlosberg 2007, 136–138). As discussed, biodiversity taxonomic work, at its heart, should be seen as a social-ecological concept, and as such, the natural world should be considered when understanding the effects these classifications have on the regulation and control of the natural world.

However, the limitations of consensus structures are apparent when we begin to think about them as tools used in the forum of environmental and ecological justice. The access systems are not yet mature enough to convey the nuances of their arrangement and their potential limitations in the domains of public practice. Common notions of environmental justice rely on a relatively straightforward critique of injustice through the distribution of environmental harms, or on the justice associated with the beneficial aspects of a clean environment (Gilio-Whitaker 2019, 23). And indeed, As Dina Gilio-Whitaker notes, “for a conception of environmental justice to be relevant to a group of people, it must fit within conceptual boundaries that are meaningful to them” (2019, 24). For one, it isn’t enough to merely

distribute the ill effects of environmental destruction, we must seek an environmental and ecological justice that stops environmental harms altogether. For American indigenous populations, colonialism proper began as an environmental injustice, and thus, any attempt to offset these injustices must reconcile with this settler-colonial past (Gilio-Whitaker 2019, 12). Tied as it is to colonial power, an indigenous environmental justice is one that sees as its goal the repatriation of native land, as well as the deconstruction of the systems that monitor and maintain the capitalist and white power structures. Given that indigenous ways of thinking are intricately tied to the environmental domain, all damage and violence performed to indigenous populations involve, in some way, environmental injustices. This fact taints most, if not all, legal attempts to offset environmental injustices, given that they are rooted, to begin with, in imperialist motivations (Gilio-Whitaker 2019, 149)

To reorient a biodiversity taxonomic framework in such a way means reorienting the ways in which we collect, form, and deliver the *form* of knowledge within classification systems. This is no easy task, but one that has been tackled by some from within the sciences (Alexander et al. 2011; Aswani and Lauer 2014; Ban et al. 2018; Reyes-García et al. 2016). Without a more promiscuous-realist and pluralist conception of classification—a collective biodiversity system in which, at least, *some* classifications represent indigenous ontological and epistemological commitments—efforts to overcome ecological and environmental injustices in the eyes of indigenous populations will fail from the start. We cannot begin to liberate nature on indigenous terms if the primary tool to facilitate this liberation is based on the scientific colonial powers that imprisoned it in the first place. The difficulty in incorporating indigenous ways of understanding nature into taxonomic work arises, at least in part, from the ingrained belief in the nature-human bifurcation: indigenous culture’s relation to nature, and the scientific knowledge that proceeds from it, never acknowledged such a distinction. Looking again to Gilio-Whitaker (2019, 27), “the very thing that distinguishes Indigenous peoples from settler societies is their unbroken connection to ancestral lands.” What we have broken, nonetheless, we must continually try to mend.

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Power of Position

Classification and the Biodiversity Sciences

By: Robert D. Montoya

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