3 GLOBALITY

HYPOTHETICAL WEEVILS

Working with biodiversity classifications is not for the fainthearted, if analyzing seemingly insurmountable caches of data is not in your bailiwick. Biodiversity taxonomies are no longer defined solely by the local, which, by and large, defined taxonomic work prior to our contemporary, computationally ubiquitous period. If we look to the relatively recent history of biodiversity taxonomic science, one of the greatest changes to the discipline has been the globalization of information and the emergence of centralized aggregated spaces of taxonomic data. The reality is that taxonomies are now predominantly global, or at least it is the global taxonomies that are beginning to garner more attention. Spurred on by big data genome projects such as the Human Genome Project (Leonelli 2016, 17–18), the biological domains—and especially in the field known as computationally intensive bioinformatics (Stevens 2013)—required both an increase in the capacity to store and maintain data in centralized repositories and the coordinating mechanisms to share data across data-intensive projects. The same can be said for the biodiversity taxonomic world, which in the 1990s also began an infrastructural explosion of its own.

Well into the late 1980s and early 1990s, analog nomenclature lists—index listings of formal species names and their synonyms—were the most prevalent form of data used in taxonomic practice. For example, the printed Index of Fungi (Petrak 1969) was *the* official listing for fungus specialists well into the 1990s. When I first met Paul Kirk, then the main editor of Index Fungorum (2021)—the name for the now-digital version of the Index of Fungi—at his Kew office in London in 2017, he started our conversation by pointing to a row of books sitting on the shelf above his desk that collectively formed the core text for the Index Fungorum, which began as an initiative at the Centre for Agriculture and Biosciences International (CABI). When the International Mycology Institute, an initiative under the administration of CABI, integrated computational technologies into their work processes, Paul Kirk and colleagues meticulously transferred the Index of Fungi, a 625-page dictionary of fungal terms, as well as numerous index cards inherited from subscription-based index listing services prior to the 1980s, into digital form in the late 1980s and 1990s (Kirk 2017). As of October 2021, Index Fungorum holds 532,288 online records contributed by more than a thousand individual authors (Royal Botanic Gardens Kew, 2021), which represents both the historical core of the literature and the myriad "born-digital" contributions added to the database since its inception. Truly a project of great proportions, rife with details that would confound even the most patient information specialist.

Through the eyes of the average nonscientist, the result of biodiversity work such as this seems deceptively, even alluringly, simple. After all, it seems easy to list things—one need only briefly search an online search engine for the phrase "bird-watching therapy" to see how therapeutic and serene bird-watching can be! You just look for things *in nature* and voila, you begin making your list! Lists such as these, however, are compiled at varying levels complexity and their range of contributors is likewise surprisingly complex and varied. On the ground, so to speak, scientists will typically specialize in a family or genus of organisms. For example, a scientist or group might study weevils (order: Coleoptera) and compile detailed listings of species within that group. Nico Franz's (2020) work—a prominent systematist active in biodiversity informatics—studies the evolutionary history of weevils, with an even more specific focus on Neotropical and Sonoran Desert species groups. As one might imagine, the databases of information produced from these studies are often then contributed to a larger entity for integration into a larger cache of data. The road from a scientist's desk to the global scene, however, is neither clear nor simple to traverse.

To illustrate how local data might travel to global spaces, let us imagine a hypothetical weevil database for the Sonoran Desert—let's call it WeevilBase—containing species names, along with data related to each species. This supporting data could be most anything, including specimen measurements, qualitative descriptions, field site sample numbers, contributor and institutional information, genetic information, geographic coordinates, ecological context, images, and so on. Suppose it dawns on the builder of WeevilBase that this data might be useful for other scientists in the world, and so this taxonomist goes about finding possible locations to deposit their data. More than likely, in today's environment, a scientist interested in sharing data contributes their data to a database like the Global Biodiversity Information Facility (GBIF), arguably the most visible, and certainly the largest, aggregator of biodiversity data points on the planet. GBIF was formally established in 2001 as an open access environment, with the primary intention of aggregating biodiversity data toward the goal of a global view of extant biological knowledge.

GBIF functions through a distributive structure, with its Copenhagen-based secretariat supported by a governing board, as well as various standing committees and task groups populated by scientists and professionals around the world (GBIF 2020a). GBIF also has important policy-oriented roles in the global infrastructure of biodiversity data. The organization is charged with coordinating a series of global nodes (operational bases) throughout the world. These nodes are often located in a prominent natural history museum or other biodiversity-related institution within the node country. As of April 2021, one hundred such nodes had agreed to a nonbinding memorandum of understanding, promising to coordinate and maintain an internal institutional network of data creators. Contributors are from all over the globe, from Andorra to Zimbabwe, Argentina to Vietnam. Funding from GBIF typically comes directly from governmental agencies, large scientific institutions, and universities. Given this reality, GBIF has a prominent voice in both local and global polices that relate not only to data but also to the broader realm of biodiversity activities.

Returning to WeevilBase, let us imagine another scenario—one in which a scientist did not want to donate all supplemental data to an open-access repository, but rather wished to donate only species names. This is also quite valuable, of course. As in the Index Fungorum, valid, code-compliant names are an important organizing mechanism for databases, and provide vital information for scientists all over the globe. Species checklists and nomenclatures aim to be a "universal and complete" reference that identifies which species exist in a particular area; without this information, "we cannot sustainably use, explore, monitor, manage and protect biodiversity resources" (Species 2000 2017a). Species checklists are compiled for various reasons and function most effectively if they are "integrated, coordinated and disseminated from a single platform" (Hamer, Victor, and Smith 2012, 1). To aid in this broader system of names, then, the owner of WeevilBase, based (hypothetically) in the United States, has chosen to contribute this data to the Integrated Taxonomic Information System (ITIS 2020). Based at the Smithsonian National Museum of Natural History, ITIS is an important source of species names, especially built for governmental use. The names in ITIS are code-compliant, meaning they have followed international standards for their articulation and are accepted in the scientific community as being correct. These names are then embedded into a relational hierarchy that is tantamount to a database-style tree of life. This hierarchy—often called a taxonomic backbone, similar to the Catalogue's—is then used to organize data coming into an organization. The US Department of Agriculture, for example, might use this list to validate and control the possible importation of vectors into the country. Or, perhaps, certain subsectors of the US Environmental Protection Agency might use these taxonomies to manage incoming environmental monitoring data. By donating one of the best databases on weevils, WeevilBase's creator is greatly contributing to the proper management of weevils throughout the United States, including perhaps larger-scale ecological studies that rely on that same data to monitor fluctuating species counts in response to climate change.

The management of ecological matters in the United States is one thing, but the country-specific data is itself also valuable as part of a larger, global context. Biodiversity data is, at its heart, data about local phenomena that have global applicability and importance, but wedding local knowledge with global data markets is no easy task. Paul Edwards emphasizes this distinction, and the shift from localized to global data, in his *A Vast Machine*, an extensive study of climate data and organizations (2010, chaps. 8, 10). As Edwards emphasizes, standards and policies are absolute necessities to accomplish this kind of intercountry structural infrastructure. This process of standardization and normalization is a top-down process that requires data be examined and organized broadly, such that organizations all over the world can take advantage of resources. But these standardization mechanisms often ensure that local practices are diluted to cater to the lowest common data denominator.

If one were to provide a list of the most pertinent databases in the global biodiversity and biological taxonomic world today, one would list a bevy of acronyms and distributed initiatives on top of what we've already discussed: International Barcode of Life (BoL), World Register of Marine Mammals (WoRMS), the Biodiversity Heritage Library (BHL), and the Encyclopedia of Life (EoL), to name just a few. The fact is that, like the domain of physics and climate work, biodiversity work has become increasingly global and distributed. The organizational lattice needed to support, maintain, and make accessible biodiversity information is not uniform or singular, but is rather a network of organizations that work collaboratively to maintain some of the largest representational infrastructures in science. Within any network, you have organizations specializing in certain tasks, which might include designing an organizational structure to keep data uniform (such as ITIS), collecting and maintaining data (such as GBIF), providing access to historical literature (such as BHL), providing access to vital knowledge resources (EoL), and advocating for policies related to data (GBIF). To activate the global potential of WeevilBase data, ITIS would have to have clear mechanisms to engage with this global data consortium.

Enter, the Catalogue of Life.

THE CATALOGUE OF LIFE

Luckily for WeevilBase, ITIS is a core partner of the Catalogue of Life, which as introduced in Chapter 1 is one of the globe's principal taxonomic backbones for biodiversity data. The Catalogue drew a great deal of attention within the scientific community when it formed in 2001, mostly from scientists quite optimistic about the prospect of an aggregative, authoritative taxonomic system (Reichhardt 1999; Bisby et al. 2002; Cachuela-Palacio 2006; Gewin 2002). As Frank Bisby outlines in his article, "The Quiet Revolution: Biodiversity Informatics and the Internet" (2000), early organizations like Species 2000 (2015a)—a joint program between the European-based International Council for Science: Committee on Data for Science and Technology; the International Union of Biological Sciences; and the International Union of Microbiological Societies—initiated a collaborative mechanism to produce backbone taxonomies to support the aggregation of data from disparate entities around the globe. The Catalogue is one result of this push. The Catalogue comprises two previously independent entities that merged in June 2001 (Bisby et al. 2002): the Species 2000 organization (2015b), which covers species across the globe (with an original emphasis on European species), and ITIS.

The primary motivating individual for this pan-Atlantic merger, Frank Bisby, believed that the globalization of biodiversity data, and the interoperability this centralization facilitated, was essential to expanding the capacities of future research in the biodiversity sciences (Bisby 2000). Species 2000 remains the current legal body for the Catalogue, charged with the responsibility of coordinating contributing entities and governing the use and policies of the produced data (Species 2000 Secretariat 2015a). The Catalogue has two core functions significant to this narrative: (1) it has charged itself with compiling the most comprehensive listing of all known existing species on the planet, and (2) it arranges these species lists into a consensus-based classification that can be subsequently used to organize the data for its partner institutions.

As of October 2021, the Catalogue contained more than 2 million species, populated by more than 163 individual databases from around the globe (Species 2000 2021b). Presuming a total of 2.3 million extent species, the Catalogue has successfully mapped approximately 87 percent of life on the planet (Species 2000 2021c).[1] While ITIS's total contributions initially made up 50 percent of the Catalogue's Annual Checklist, their percentage has decreased over time. Though detailed data from the 2000–2004 data sets is no longer easily available, contributions from ITIS constituted 158,884 of the 220,000 core species names in the taxonomic Catalogue of Life database in 2005—a full 72 percent of the total database species count. Comparing these figures with more recent data from the 2019 release, ITIS contributions have increased by only a small margin, to 148,975 total species. However, given the Catalogue species total is upward of 2 million species and still growing, ITIS is contributing a smaller and smaller percentage of the total database environment over time. The diminishing role of ITIS in the Catalogue's totals points to a rather significant fact: as more specialized databases enter the system, we must contend with the concomitant complexities this adds to the system. Species lists are notorious for continually changing, for reasons that will become obvious, but suffice to say for the moment that stability is a rare quality of these lists. But if the Catalogue is intended to be a system to communicate the evolving landscape of biodiversity data, a question arises as to how best to deliver information in a way that properly expresses this dynamic reality. During a Catalogue of Life meeting in 2017, a conversation precipitated among a group of scientists discussing the implications of making nomenclatural data sets available before being edited:

Participant 1: Most of the researchers consider this database a work "in progress." It's never finished. This is part of the problem. It's that the work is not finished.

Participant 2: I'm afraid to open raw data to the public because somebody will take the data without knowing what happened in the work bench. It *is* eventually finished, but it doesn't loop back. The Catalogue of Life encourages the publishing of draft systems monthly. [The] final, annual checklist will have a more polished presentation.

Participant 3: There is a psychological element. Scientists want it to be perfect but it never will be.

Participant 4: Users don't see how much work goes into compiling the database.

Participant 1: Because most of the custodians do it in their spare time. If you have an incomplete data set you get questions and you have to spend time answering them.

Participant 5: If you care about the science you don't want to publish something that isn't refined. We strive for perfection because we have the knowledge and want to pass it on. We feel a disservice if it is not finished.

As can be gleaned from this discussion, the when and how best to publish data is an ongoing issue of concern, coupled with the reality that taxonomic inference is always, to a certain extent, ongoing and not fully "completed" in the proper sense of the term. As Thiele and Yeates (2002) penned in *Nature*, the hypotheses represented by biodiversity taxonomies are particularly volatile, making consensus, properly speaking, a fleeting target. There are always more specimens to collect and more opportunities to optimally refine data. Additionally, since the Catalogue ingests taxonomies as they become available and staggers database updates over the course of the year, a portion of the Catalogue is always in "process," so to speak—even beyond the ongoing taxonomic work experienced at the local level.

To offset this unavoidable issue, a two-pronged publishing model has been established. As indicated by then executive editor for the Catalogue Yury Roskov, based at the University of Illinois at Urbana-Champaign at the time of publication, the Catalogue has begun to see itself function under the serials model of production:

> My contribution to the aggregation and editorial process was identifying that we need to move the Catalogue of Life as close as possible to the traditional way of scientific journals. It means that if you have a choice [among] different taxonomic databases that cover the same group, we need to have a peer review process where independent reviewers will tell us which is the best source, and this takes time. And so we established the monthly and annual editions (2016a).

The first iteration is a "dynamic" monthly edition of the database, which is meant to provide an easily searchable up-to-date snapshot of Catalogue data. What you lose with this method currently, however, is a product that has been carefully vetted and approved by the editorial process. This edition is not archived, per se, but is rather meant to express as accurately as possible the iterative nature of the database. The documentation associated with this version is limited: "Anything can change as the [species] list develops: names, their associated details, and their content providers—and there is no tracking of those changes. For that reason, the monthly edition is not the one to quote if you wish to cite a verifiable source" (the ephemerality of these data sets is indicated by the dotted boxes in figure 3.1) (Species 2000 2015d).

The second iteration, the Annual Checklist editions, are published both online and in CD form in what the Catalogue calls "fixed imprints" (Species 2000 2017b). This version is static, citable, and formally published and identified through an International Standard Serial Number and an edition designation (an identification number applied to journals and other serial publications). Figure 3.1 outlines the products and entry points for the annual version of the Catalogue. This is the version that is often implemented as the backbone structure for other information products. The annual version also provides the opportunity to compare iterative data sets and is still published in compact disc form (many developing countries, lacking high-speed internet, still prefer or require disc format, despite its fall from favor elsewhere). As Geoffrey Bowker (2008) has articulated, databases contain the root elements of a narrative that are vital to understanding the constitution of social and scientific practices. So, the annual narrative serves as a mechanism for better understating the development of the Catalogues "consensus" over time. Synonymy fields are built into the Catalogue to allow for variable terminology for species—an issue that remains common in most classification systems, including the Catalogue.

With the nomenclature as the base, the Catalogue then serves a second function: it relates these species lists into hierarchies that serve as a backbone taxonomy for databases throughout the world. The "management classification," as it is called, is curated by a series of experts and, unlike other systems, sidesteps the use of algorithms to instead find the best arrangement, given the innate conflicts among different taxonomic opinions (Species 2000 2015b). Contributed data sets are distributed among

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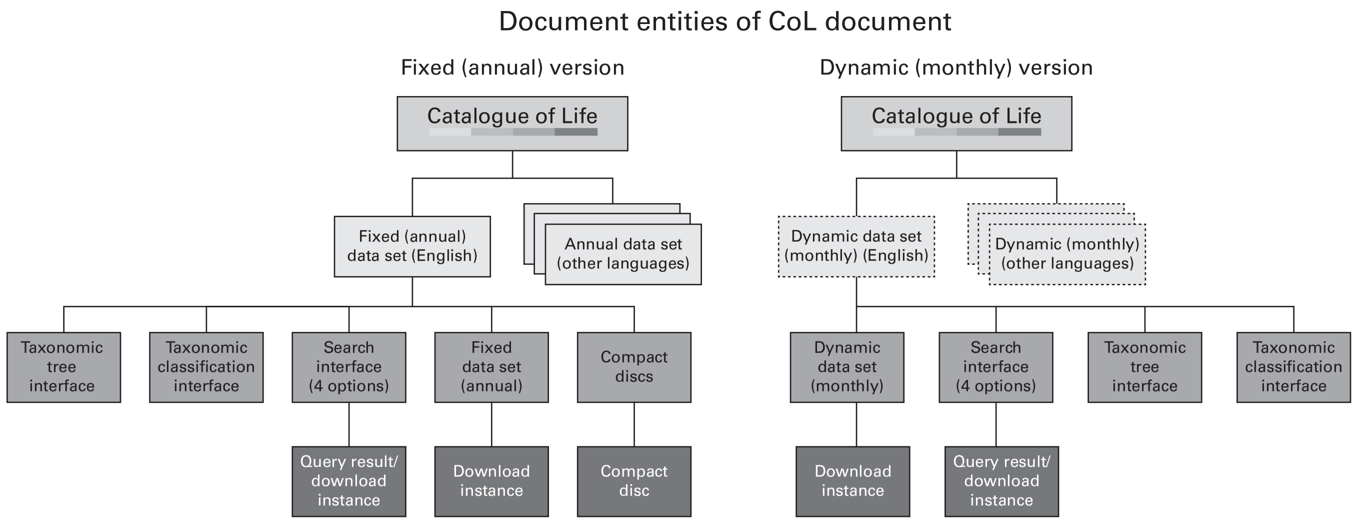

Figure 3.1

Publishing model for the Catalogue of Life. The left flow chart indicates the entity types for the fixed (annual) version of the Catalogue. The right flow chart indicates the entities for the dynamic (monthly) version of the Catalogue. The dynamic version is not archived or saved for later use, so they are temporary exemplar documents (indicated by dotted lines).

three databases types in the Catalogue: global species database (GSD), regional species database (RSD), and a thematic species database (TSD) (Species 2000 2014). GSDs contain worldwide coverage of the species within taxon (all the weevils in the world compiled in one space). RSDs contain regional coverage of a species within one taxonomic group (all of the weevils from the Sonoran Desert, such as our WeevilBase). TSDs are particular arrangements of species collected for reasons other than primarily geographic coverage (weevils that have been artificially introduced to a certain area, for example, or weevil species that live only in caves on the European continent). These subsidiary databases are contributed from various locations around the world, including from the likes of Royal Botanic Gardens, Kew; the World Register of Marine Species (WoRMS) (2017); Fishbase (2017); and Systema Dipterorum (Pape and Thompson 2017), which constitute the largest subsidiary databases within the Catalogue (Species 2000 2015b). Over time, as more and more GSDs and RSDs are added the Catalogue, species checklists become more robust. The Catalogue stands at the center of a multitiered infrastructure, ingesting subsidiary databases from regional hubs from around the world (see figure 3.2).

An important issue to reiterate is that no universally accepted reference taxonomy currently exists in the biodiversity world. As such, conflicts between contributed taxonomies within composite structures do exist in abundance. Recall that our invented regional species database, WeevilBase, was compiled by one scientist, and therefore the taxonomic arrangement of weevils as it exists in that database represents one scientific opinion. Let's assume that WeevilBase was compiled with phenetic commitments, meaning that species relationships were based primarily on physical and morphological characteristics. Now imagine that another global species database for the order Coleoptera, hypothetically named BeetleMania, which comprises all beetle species, including weevils, was also accepted for inclusion in the Catalogue. BeetleMania, however, uses a cladistic approach, meaning that species are arranged based on most recent ancestor relationships. The result is that WeevilBase and BeetleMania will conflict at the level of weevils in terms of their hierarchy. Editorial intervention by the Catalogue is then needed to reconcile these differences.

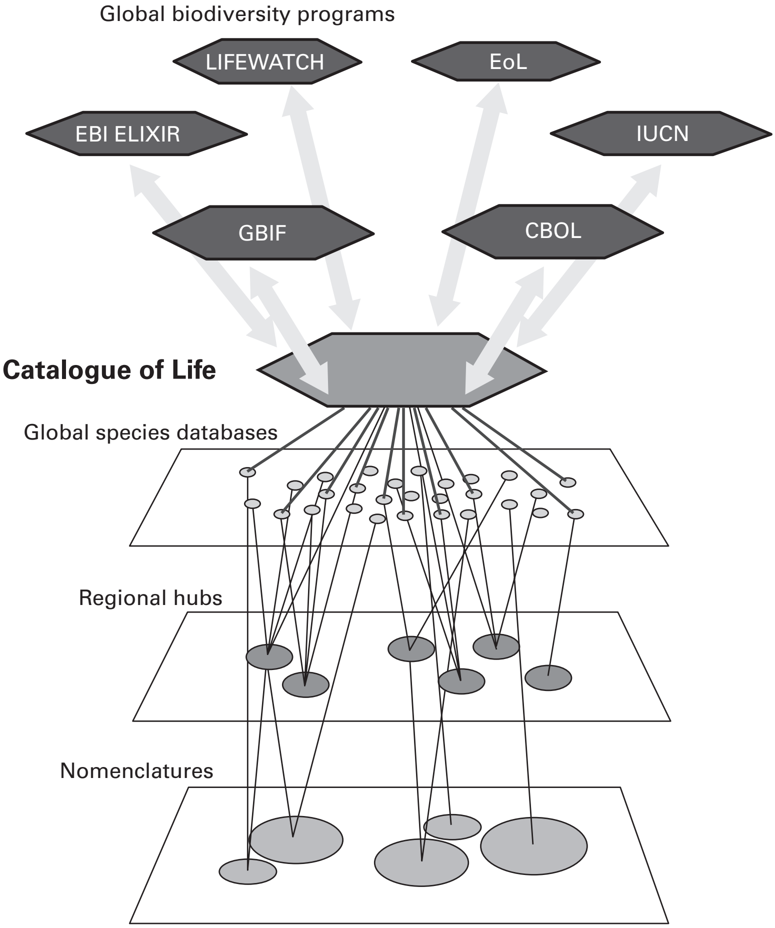

Figure 3.2
Catalogue of Life infrastructure layers (Species 2000 2015a). Nomenclatures exist at the bottom of the infrastructure layer and include all code-governed nomenclatural acts, including original name usages (in taxonomic literature) and objective synonyms, as well as other name forms. Regional hubs are regional checklists (RSDs) for a given geographic area. Global species databases (GSD) give taxa on a global scale. The Catalogue is then used as a taxonomic backbone for many other online systems. CC-BY 4.0, Catalog of Life, used by permission.

In the scenario above, WeevilBase, which began as a small, regionally based database, has now successfully radiated throughout the biodiversity data network. The result of this move toward composite structures is of great consequence to the way we understand the epistemic qualities of classifications, particularly because, as more and more subsidiary databases come together to create a management classification scheme, it becomes increasingly more difficult to differentiate the permutations exacted on the data and hierarchical structures in any given taxonomic database. In the process of this dislocation, data is wrested from its original context. In the process of gaining global authority, we lose aspects of the data's local integrity.

This process of composition, then, wields great organizational power within the field of biodiversity taxonomy as whole. And as Andersen and Skouvig have shown with their collection of essays, *The Organization of Knowledge: Caught between Global Structures and Local Meaning*, "Contemporary digital information society has globalized information structures and facilitated easier access to information across libraries, cultural institutions, and in the Internet. While this has helped shaped global discourses it has often done so at the expense of localized meaning and ethics" (2017, xi–xv). Obfuscating the local in deference to the global brings about its own professional and epistemic challenges.

Miranda Fricker (2009) makes a similar note about the systemic qualities of the distribution of power in *Epistemic Injustice: Power and the Ethics of Knowing*. In Fricker's context, a key notion of social power is that it is structurally embedded; to offset the epistemic injustices that precipitate from within any society, we must be able to trace how these myriad effects are caused by multiform, intersecting mechanisms. Although power can be exerted individually (as in person to person), perhaps its strongest trait is that the levers of injustice are invisible and impossible to pinpoint in any one location. In distributed classificatory spaces, of which the Catalogue is just one, this obfuscation of power is subsumed within a complex arrangement of standards, tools, policies, and managerial decisions. Which reiterates Foucault's point: "Power in the substantive sense, *le' pouvoir*, doesn't exist." Foucault notes,

> What I mean is this. The idea that there is either located at—or emanating from—a given point something which is a "power" seems to me to be based

on a misguided analysis, one which at all events fails to account for a considerable number of phenomena. In reality power means relations, a more-or-less organized, hierarchical, co-ordinated cluster of relations. (Foucault and Gordon 1980, 198–199)

Understanding how to trace the routes of power within institutions is quite difficult, to say the least. Foucault said, "Truth is to be understood as a system of ordered procedures for the production, regulation, distribution, circulation and operation of statements" (Foucault and Gordon 1980, 133). A virtue of a system like the CoL is that it absorbs the burden of the hefty task of data aggregation in ways that, for at least some, productively brings local knowledge in conversation with global knowledge systems. One downside, however, is that aggregation masks complex intellectual operations that dictate the usefulness of the system to any one scientist or user. It is difficult enough to wrap your head around the organizational complexity of figure 3.2, and this figure only hints at the many epistemically significant decisions occurring at each of these levels. As T. S. Eliot notes, however, "In a minute there is time / For decisions and revisions which a minute will reverse" (Eliot and Carr 2002). How these decisions will come to be understood and contextualized in the larger CoL system is the burning question in the minds of many taxonomists.

This isn't to say that any one individual within the Catalogue is necessarily responsible for any particular obfuscation that might occur. This phenomenon is a practical quality of all systems, within and without biodiversity taxonomic work. As Bowker and Starr wrote, "Once a system is in place, the practical politics of these [classification] decisions are often forgotten, literally buried in the archives (when records are kept at all) or built into the software of the sizes and composition of things" (1999, 45). Iris Marion Young similarly notes, in *Responsibility for Justice* (2011, xviii), that while an individual might ultimately be the agent enacting the injustices facilitated within systems, the embedded, structural components of systems facilitate injustices in ways that extend far beyond individual responsibility. She speaks of a woman named Sandy, forced to relocate from her dilapidated condo, who begins to seek affordable housing for herself and her children. Unable to meet the expensive demands of rent, a down payment, and car payment, Sandy is forced to question whether homelessness might be in her future. Young's point is that, while any *one* of these variables might independently seem tenable, if unfairly inflated, it is the intersection of these high prices, embedded as they are within a larger, exploitative economic system that creates the environment for her unjust position. Similarly, while the Catalogue might be faulted (rightly or wrongly) for many of the decisions implemented in their system, the reality is that, given the complexity of taxonomy work in general, epistemic obfuscation *of some kind* is inevitable. One cannot "archive" every step of the decision-making process, whether at the local, individual, or global level.

SOCIAL-ECOLOGICAL SYSTEMS

Structurally, the Catalogue is a complex open-source system that must meet the current needs of biodiversity specialists. As will be discussed, it also provides data to prognosticate future needs for data that are not yet at the forefront of asset discovery and research. In thinking about how to critique the circulation of power within systems of this complexity, I have found it helpful to think in terms of Elinor Ostrom's, "A General Framework for Analyzing Sustainability of Social-Ecological Systems" (2009). As a political economist, Ostrom's primary interest in this piece is identifying a structural analytic by which we can understand how best organizations (governments, industries, and the like) can *sustainably* yield resources from the natural world. In the article, Ostrom focuses on the lobster fishing industry of the coast of Maine, and notes that many subsystems within this area merit specific attention: "resource systems (coastal fishery), resources units (lobsters), user (fishers), and governance systems (organizations and rules that govern fishing on that coast)" (2009, 419). A central problem in this approach for Ostrom, however, is that in order to effectively manage social-ecological systems (SES) that are sustainable, one needs to look *across* disciplines—for example, to knowledge from the social sciences and ecological sciences, which operate under different sets of epistemic and methodological assumptions. "Thus," Ostrom writes, "we must learn how to dissect and harness complexity, rather than eliminate it from systems" (2009, 420).

In light of this, Ostrom creates a detailed framework that breaks down SES into first-order variables and second-order variables that can be used to assess their suitability and efficacy. Each component within this framework is seen to intersect with another, as well as with the social, ecological, and political contexts of that SES (2009, p. 420). Ostrom's subsystems include a resource system; its resource units; its governance systems; and its users. Each subsystem is then broken down into its component variables that, comprehensively, can be used to examine how sustainable that industry system might be, both in the present and as it proceeds into the future. So, if we were to take the Catalogue of Life as our resource system, the variable Ostrom (2009, 421) identifies as significant would be,

RS1 Sector (e.g., water, forests, pasture, fish)
RS2 Clarity of system boundaries
RS3 Size of resource system
RS4 Human-constructed facilities
RS5 Productivity of system
RS6 Equilibrium properties
RS7 Predictability of system dynamics*
RS8 Storage characteristics
RS9 Location

In this case, since Ostrom is concerned with the sustainability of natural resources within certain sectors of economic activity, the application of this model has its limits when we look to the mechanisms of power within an entity like the Catalogue. However, I argue that, with some tweaking, Ostrom's subsystem components could be amended in ways that more closely align with the concerns of a classificatory environment.

To avoid the trap of getting too far ahead of our ourselves, let us focus on just the first three variables within the resource system (RS) category. Let us ask this question: In what ways is the Catalogue suppressing the transparency of local knowledge in its global aggregated system? The sector

(RS1) variable is straightforward enough: biodiversity taxonomic work—so far, so good. Clarity of system boundaries (RS2) is interesting, however, particularly because, as classifications are brought into the management taxonomy and set beside each other in the CoL (see figure 3.2), we aren't entirely sure where the taxonomic principles of the *contributed* taxonomies end and the principles of the *management* taxonomy of the Catalogue begin. In this way, the clarity of taxonomic boundaries of local knowledge are somewhat hazy. Looking to the size of the resource system (RS3), we might also make the claim that the size of the resource system is both too broad *and* too limited. It might be too broad, given that the larger the Catalogue gets, the more diluted local knowledge might become. On the other hand, the system might be too narrow, given that it accepts only knowledge structures specific to Western scientific sensibilities and ignores (perhaps understandably) diverse, counter-epistemic knowledge systems of indigenous tribes throughout the world. Surely, indigenous knowledge has something to add to this global picture. (We examine the problematic of the Western gaze in chapter 8.)

Theoretically, we can proceed with Ostrom's analytic and break down the various ways local knowledge might be suppressed and obfuscated by way of the Catalogue's overall structure. The function of this chapter has been to illustrate how locally derived species and taxonomic information might find its way into global infrastructures. In the brief examination of WeevilBase, we can begin to imagine the levels of complexity introduced at each step throughout the process: from the Sonoran Desert, where local data on weevils is collected; to the desk of the weevil scientist, where taxonomic charts are carefully constructed; to the global database space of GBIF, where WeevilBase data becomes intricately enmeshed with data derived by scientists throughout the globe. The gist of the matter is that, although the discipline of information studies has posited power as a central mechanism of concern in the space of classification and representation, the discipline has yet to see many deliberate deconstructions of systems in the manner proposed by Ostrom. I posit this book as an example of how we might use a model such as Ostrom's to locate power levers within classifications and thereby better understand their cultural impacts on our society.

Power of Position

Classification and the Biodiversity Sciences

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