

Orchestrating Nature

Ethnographies of Nature™ Inc.

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In the summer of 2007 a reader of the London-based *Independent* posed a question to former US vice president Al Gore: “In 1992 you advocated a new set of ‘rules of the road’ for the conduct of the global economy, to take account of environmental costs and benefits. What progress do you think has been made since then?” Gore responded: “Not nearly enough. And actually, a re-examination of accounting systems and measurement protocols to include the environment in the routine, everyday calculations by which our economy is governed, comes about as close as you can get to the heart of why we have this crisis. . . . [A]ccounting systems are required to hold routinely in mind factors that are deemed to be important and significant in weighing the pros and cons of any decision. There has been progress to reform and redesign the accounting system. But not nearly enough.”¹

Gore’s remarks were prescient. They were uttered just four months after a German proposal to undertake a study on the “economic significance of the global loss of biological diversity” had been adopted at the 2007 Potsdam G8+5 meeting. Three years later, in 2010, during a press conference that introduced the resulting study—The Economics of Ecosystems and Biodiversity (TEEB)—at the 10th Conference of the Parties (COP10) to the Convention on Biological Diversity (CBD), the team leader, Pavan Sukhdev, a former senior banker with Deutsche Bank and, until recently, head of the United Nations Environment Programme’s Green Economy Initiative, made a striking comment: “This is one world; it’s ours to create.

Let us create it and make it what we want, rather than wait for it to be dictated to us through further crisis and further problems.”⁷²

These comments from Gore and Sukhdev neatly reflect the rhetorical force of “natural capital.” The world that TEEB seeks to create is one that materializes Gore’s image of a nature simultaneously “accounted” for and made subject to market exchange. In many ways this attempt to bring nature into alignment with an expressed vision of that world is nothing new and reflects the process that Carrier and Miller (1998), among others, have described as “virtualism.”

“Nature” has always been brought into being through processes of abstraction—ways of cognitively imagining, or more often being taught to imagine, one’s surroundings as existing in particular ways for particular reasons such that they can be acted upon toward particular ends. Through time and across space people have imagined “nature” in different ways, with accordant differences in what were considered legitimate modes of interacting with the world around them. However, these ways of imaging the world have rarely been uniform or gone uncontested. Even in instances where ideological domination assumed doxic (or taken-for-granted) qualities, there have been competing modes of abstraction. Consequently, the conditions that created the dominant abstraction, and the practices of enacting it, needed to be continually (re)enforced.

In the past two decades, a particular image of “the world” as natural capital has gained prominence. In some sense this is not new. In industrialized societies “nature” has been implicitly treated as capital. What is new is a striking reduction in the opposition to the idea of a natural world defined as capital. Environmental institutions such as the CBD that might have challenged the subordination of “nature” to “the economy” have rapidly become strong proponents of market-based mechanisms through which nature is being increasingly privatized, commercialized, commodified, commoditized, and ultimately enclosed and, in the process, erasing pre-existing socionatures (see Brockington and Duffy 2010b; Büscher 2009; Carrier and West 2009; Castree 2008a, 2008b; Heynen et al. 2007; Igoe, Neves, and Brockington 2010; McAfee 1999). These processes not only have given rise to the concept of “ecosystem goods and services” but are also actually creating markets for their exchange (Robertson 2007; Sullivan 2011a), a process essential to their materialization.

What interests us here are questions about the dynamic processes whereby new markets and property relations are created and defined and in which power relations are realigned (McCarthy and Prudham 2004). How is natural capital enacted, and how are the conditions that create

the abstractions upon which it depends produced and reenforced? This process, we suggest, requires the continual (re)alignment of actors, labor, and instruments around specific interests and ends. Further, that alignment involves substantive efforts of articulation (Hall 1986), circulation, and orchestration in attempts to enlist actors, institutions, and instruments in the project of (re)producing what we once knew as “the environment,” or “nature,” as “natural capital” (see Mitchell 2008).³ While we see this as an integrated effect of neoliberalism, our focus is not on neoliberalism *per se* but on revealing the important role of performance and the enactment of expertise and authority in the work of alignment and articulation that neoliberalism (in all its variegated forms) requires.⁴ We see that work as an important component of what Carrier and Miller (1998) describe as “virtualism.”

In this chapter we combine the theoretical lens of virtualism with the empirical object of a new multilateral project (TEEB) and the physical site and instance of the COP10 to explore how processes of performance, orchestration, alignment, and articulation stitch together a dense weave of interests and actors in making real a vision of “nature” as capital. TEEB began as a study on the economics of biodiversity loss. While officially hosted by the United Nations Environment Programme (UNEP), TEEB’s working units, including a communications hub and a scientific coordination group, were located in Germany and financed by the European Commission, Germany, the United Kingdom, Norway, the Netherlands, and Sweden. Led by Pavan Sukhdev, the project’s goal was to produce a Stern Report for biodiversity.⁵ As it unfolded, TEEB linked and mobilized a group of actors focused on the pricing and costing of ecosystems and biodiversity, producing reports aimed at distinct bodies of decision makers and putting in place demonstration projects oriented around mechanisms to incorporate the productive value of ecosystems and biodiversity into national accounts.

We argue that TEEB, which as a performative project mobilizes the alignments and articulations required to overcome obstacles to the realization of “natural capital,” is an institutional expression of an environmental vision intended to bring the world into conformity with that vision (Carrier and West 2009). In what follows, we use our observations on TEEB to further refine the concept of virtualism, asserting that virtualism begins with an ideological commitment, in this case to place an economic value on nature. Yet, we also understand virtualism to be an ongoing process of reproduction grounded in conditions of contestation, where directionality emerging from the configuration of power relations and agencies is

continually in the making. This means that any virtualism must be linked through virtual moments. It also demands that virtualism be performative: making the world conform to an image of itself requires constant orchestrating, aligning, and articulating actors, interests, institutions, and mechanisms to turn fragile social ties into durable associations (Latour 2005).

While the “performativity of economics” paradigm has been associated historically with studies of specific market technologies generated at specialized sites (e.g., Callon 1998a; Garcia-Parpet 2008; Holm 2008; MacKenzie 2003; MacKenzie, Muniesa, and Siu 2007), recent analysis of economic performativity explores the processes of “economization.” This agenda is inclusive of a larger variety of sites and practices (Çalışkan and Callon 2009, 2010) than those generated at relatively local and specialized sites. With this in mind, we emphasize the performativity of a conference site, where the site itself serves as a stage that conditions the agency of TEEB in the production of natural capital as reality. In revealing the work of TEEB as performative in conforming reality to virtual reality by creating the conditions for the emergence of ecosystem markets, we highlight the importance of particular sites and spaces in the (re)production of agencements that we see as essential for an understanding of virtualism.

Virtualism: Conforming the World to an Abstraction

Carrier and Miller (1998) define virtualism as the attempt to make the world around us look like and conform to an abstract model of it. These abstractions, they claim, become virtualism when virtual reality stops simply being a description of reality and becomes prescriptive of what the world should be. The “set of partial analytical and theoretical arguments that define a world . . . becomes a virtualism when people forget that the virtual reality is a creature of the partial analytical and theoretical perspectives and arguments that generate it, and instead take it for the principles that underlie the world that exists and then try to make it conform to that virtual reality” (Carrier and West 2009, 7). Virtualism, then, “is a social process by which people who are guided by a vision of the world act to try to shape that world to bring it into conformity with their vision” (Carrier and West 2009, 7).

Miller (2005) discusses the correspondence between powerful actors, powerful discourses, and the degree of control they come to exercise over the world through their ability to be performative, and he distinguishes, for example, between more and less powerful actors, with the more powerful

exercising “the ability to construct an economic world as the pure product of their own performativity, . . . reflecting their ability to take the virtual (i.e. the model) and actualize it in the world” (Miller 2005, 10). However, we argue that “realizing the vision” of natural capital does not involve distinctions between more or less powerful actors but rather requires bringing into being configurations of actors (in which we include devices, institutions, organizations), which become the reality they seek. It is the contestation among a multitude of actors, where power is relational, contingent, and dynamic, that is important.

In order to envision the ways in which actors and agencies are drawn together over time to enact the world, we draw on what Callon has termed an *agencement*—by which he means a heterogeneous ensemble of actors “made up of human bodies but also of prostheses, tools, equipment, technical devices, algorithms, etc.” (Callon 2005, 4) and which he uses to “denote sociotechnical arrangements when they are considered from the point of view [of] their capacity to act and give meaning to action” (Callon and Çalışkan 2005, 24). Callon’s perspective is helpful because it premises the effectiveness (i.e., its capacity to do work) of a proposition (e.g., natural capital) on the ability to draw together a corresponding sociotechnical apparatus.

Making the world conform to an image of itself is a long, messy, and conflicted affair involving the constant work of orchestrating, aligning, and articulating actors, interests, institutions, and mechanisms and the turning of fragile social ties into durable associations (Latour 2005). These processes—the construction of *agencements*—both require performance and are also performative (Hardie and MacKenzie 2007; MacKenzie, Muniesa, and Siu 2007). In essence, we see TEEB as an actor constituted by and constitutive of a dynamic *agencement* that works to (re)produce and reify nature as an array of goods and services subject to costing and that provides the institutional basis for creating and positioning markets as a privileged arbiter in the distribution of biodiversity and “ecosystem services.” Virtualism, then, is a contested process that, like hegemony, is never complete, although it can be successful. For virtualism to be successful, we assert, “virtual moments” need to be linked together through the alignment of actors situated differently across time and space, where, in Miller’s (2005, 10–11) words, “it is possible to write about the general history of virtualism and to carry out ethnography on the virtual moment.” By paying attention to those virtual moments, we can observe practices of orchestration, alignment, and articulation in ways that integrate actors into a shared orientation within a developing and expanding network that subsequently works to create a world in accordance with models of how the world ought to be.

Studying the Field of Biodiversity Conservation

Indeed, a primary contribution of this work and that on which it builds is the extension of an attempt to ethnographically study an event like COP10 to understand these practices of orchestration, alignment, and articulation and how the site or the event works to constitute a virtual moment as one among many in a translocal field of organized conservation (Brosius and Campbell 2010; MacDonald 2010a). This focus on the event illuminates work that is often disaggregated in space and performed in bureaucratic sites resistant to direct observation (but see Corson 2010; Mosse 2006; Robertson 2010). It also allows us to examine the reconfiguration of power relations among key actors as well as the emergence, circulation, negotiation, and stabilization of idealized categories of biodiversity, which subsequently serve as vehicles for the realization of “natural capital.”

Our capacity to do this, however, is grounded in a reconfiguration of methodological practice based on rethinking the notion of “the field” in conservation social science. This is required in part because of the intensive institutionalization of conservation practice and policy within institutions of global environmental governance such as the CBD that has occurred in the past two decades. The structure of the institutions of environmental governance that emerged out of the 1992 UN Conference on Environment and Development consolidated state authority, redirecting state and donor resources away from bilateral relations with conservation organizations and aligning them with the CDB program of work and the funding of that program through the Global Environment Facility (GEF), the financial mechanism of the convention. This consolidation of state authority under the guise of internationalism reconfigured power relations (MacDonald 2010b) and positioned the mechanisms of the convention, particularly its mandated meetings, as active political spaces—arenas in which interests could be negotiated, new social relations could be configured around those negotiations, and privileged positions and perspectives could be consolidated and codified in ways that structure policy and practice (see Strathern 2000).

We can think of these spaces, then, as what some management scholars refer to as field-configuring events (Lampel and Meyer 2008): affairs that temporarily bring actors together; construct arenas for demonstrating, displaying, and promoting perspectives, mechanisms, techniques, and practices; and provide the institutional context and opportunity to transform contestation into legitimated outcomes and shape disparate organizations and individuals into a “community” that shares a common meaning system

(Scott et al. 2000). Accordingly, we can see them as sites of “culture making,” of sense making, and of learning how to make sense.

Attending to these events is important, as the emergence of transnational environmental governance, the consequent threat of regulation, and the accordant possibility of subordinating some interests in “the environment” have drawn previously separated actors together into spaces in which claims over “nature” and the ideological and material struggles that lie underneath those claims become not only unavoidable but more readily visible and subject to scrutiny (Latour 2004). Within (and beyond) these spaces, actors intentionally seek to give substance to the institutions and organizations engaged in environmental governance in ways that express that interest. These events, then, though not necessarily privileged, become important sites in which to compile accounts of these interests; they are places where the stakes of actors are articulated, where actions and associations formed in relation to those stakes become visible, where dissension within and between groups becomes apparent, and where contestation over the shaping of conservation policy and practice becomes clear. They provide an opportunity to observe encounters (e.g., huddles among delegates) and actions (e.g., gestures, tones of voice) that do not enter the official record. By being present at the site, we are able to record the process of knowledge being translated and to observe how it gains traction in relation to particular interests. We witness meaning as it is being made, challenged, transformed, and translated. And we are exposed to the agency of those involved in the process of structuring, orchestrating, and scripting the event.

Of course, this notion of tracking phenomena through time and space is not new (see Marcus 1995, 2000, among others), but it does call for imaginative modifications of methodological practice, particularly when those relations being tracked involve multiple actors appearing simultaneously in time-condensed spaces. The size of a Conference of the Parties makes it impossible for any one researcher to effectively cover the entire event or even track specific projects, like TEEB, as they are represented across the event. In response to these challenges, we have been involved with a group of scholars in the formation of an innovative approach to studying events that we term “collaborative event ethnography.”

The goal of collaborative event ethnography is to adapt ethnographic practice to the spatial and temporal demands of the event. This means breaking from the conventional model of the lone ethnographer and the geographically contiguous community and working to realize the benefits gained from a group of observers jointly developing an approach to the study of the event, jointly developing the analytic frame for the research, training

the collective team, working together around agreed-upon objectives, with shared guides to participant observation, common formats for recording observations, and modes of sharing the resulting field notes, recordings, transcripts, photographs, and images. In many ways this is designed to mimic the ways in which other groups such as conservation organizations seek to understand and influence the outcomes of field-configuring events.

In the case of COP10, the collaborative team involved seventeen researchers. Each member was part of smaller teams constructed around a matrix of themes and topics. The selection of themes (e.g., the tracking of market logics) reflected a combination of what we identify as dominant issues influencing current conservation discourses, based on our past research as individuals and our group experience at the World Conservation Congress. Topics were dictated by the COP10 agenda, which provided structure to the event. Small teams were made up of members aligning with at least one theme and one topic and were guided in their work by team leaders. A team of five researchers tracked the presence of market-based mechanisms and private-sector actors, but they aligned themselves simultaneously with a topic that allowed us to witness the distributed presence of a project like TEEB (where it was mentioned, how it was invoked, by whom, to what end, etc.), something that would have been impossible for a single researcher.⁶

As much as this chapter focuses on the presence of TEEB at COP10, it is important to note that what is presented here is also the result of our having tracked, through time and space, the way in which the promotion of newly “appropriate” modes of conceiving, making legible, and acting upon nature have gained credence and come to define a field or assume a strong “field mandate.” Through the work of the team at COP10 it became clear that TEEB both symbolizes and enacts such a mode and is in the process of assuming a strong field mandate within organized biodiversity conservation.

The Virtual Moment of TEEB

Held once every two years, a Conference of the Parties is the primary meeting of the parties to the CBD. It is the venue where those parties revise text that was negotiated at the interim meetings of various working groups and advisory bodies to the CBD and render decisions based on that text. These decisions structure the program of work and the ideological orientation of the CBD. The conference draws together actors with an explicit interest in biodiversity conservation and configures power relations likely to mobilize material resources and institutional legitimacy in the continuing

but shifting practice of biodiversity conservation. To be institutionalized within the CBD is to have the sanction of states and to be articulated with related institutions such as the GEF. The presence of authoritative actors with the capacity to implement mechanisms through their respective organizations and personal contacts helps to establish durable associations required for the realization of natural capital. Alignment and articulation as ongoing processes are key to the (re)production of those networks. It is this temporality that makes TEEB a moment in the virtualism of natural capital and the site of COP10 an instance in that moment, because the work of producing conformity must, almost by definition, enlist dominant institutional mechanisms and actors, which are revealed in the particular moments and at particular sites like COP10 (MacDonald 2010a).

The Alignment, Articulation, and Orchestration of TEEB: From Study to Approach

TEEB's capacity to generate alignment and articulation during COP10 was built on an existing institutional calculus put in place long before the meeting. The TEEB team had to bring together people with access to diverse sectors (e.g., politics, business, science, governance) and distinct sources of credibility. They had to design mechanisms for the circulation of information among individuals contributing resources to support the project, and they had to develop modes of communication that could both differentiate among these interests and maintain some degree of unified intent.

As TEEB grew from its origin as a proposal at the Potsdam G8 meeting in 2007 to an initiative, a study, and ultimately an approach, its structure took on new shape as various qualities and properties were used to align and articulate these different sets of actors. The best evidence of this lies in the composition of TEEB's fifteen-member advisory board, which includes key organizational leaders such as the executive director of the UNEP, Achim Steiner, and the director general of the International Union for Conservation of Nature (IUCN), Julia Marton Lefevre, together with leading ecological and environmental economists. Through the alignment of key academic and policy leaders, its embrace of so-called epistemic pluralism, and a diversity of economic instruments (Monfreda 2010), TEEB disembedded economic and policy expertise from their disciplinary and organizational confines and rearticulated them as allies in a common struggle.

In May 2008 the TEEB team released the first TEEB Interim Report at the ninth COP. By COP10 in 2010, the team had released five reports/

websites targeted to different audiences: ecologists and economists, businesses, national and international policymakers, local and regional policymakers, and citizens, whose website was titled Bank of Natural Capital (<http://bankofnaturalcapital.com/>). Unabashed about its intentions, a synthesis report (TEEB 2010, 4) states: “TEEB seeks to inform and trigger numerous initiatives and processes at national and international levels.” It goes on to list various targeted processes and venues, including the G8+5 and the G20; the Millennium Development Goals; the 2012 Rio+20 Earth Summit; UN efforts to mainstream the environment in financial services; the Organization for Economic Cooperation and Development (OECD) responsible business conduct Guidelines for Multinational Enterprises; and industry voluntary guidelines.

The most striking evidence that TEEB is to become a key mechanism in state environmental planning and is likely to become an important “tool” in GEF’s funding arrangements is found in several recommendations taken in intersessional meetings of the CBD in preparation for COP10. From the May 2010 fourteenth meeting of the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA14), six key recommendations related to protected areas, sustainable use of biodiversity, and incentive measures explicitly advised parties and multilateral financial institutions, including the GEF, to look to TEEB for guidance in developing and implementing “additional means and methods of generating and allocating finance, inter alia on the basis of a stronger valuation of ecosystem services.”⁷ Two recommendations from the Ad Hoc Open-Ended Working Group on Review of Implementation of the Convention direct the executive secretary of the CBD to extend TEEB by working with UNEP, the World Bank, and the OECD to further develop “the economic aspects related to ecosystem services and biodiversity,” develop “implementation tools for the integration of the economic case for biodiversity and ecosystem services,” and facilitate “implementation and capacity-building for such tools.” They also directed the secretariat to develop “capacity-building workshops, to support countries in making use of the findings of the TEEB study and in integrating the values of biodiversity into relevant national and local policies, programmes and planning processes.”⁸

The Distributed Presence of TEEB at COP10

The use of COP10 as the stage for the rollout of TEEB attracted the attention and resource investments of potential affiliates. Within the confined

space of a Congress Centre and over a concentrated time of ten days, TEEB's distribution system was able to reach the major influential actors across a range of ideological perspectives, encourage alignment, and publicize what actors no longer referred to as a study but as an approach. The discourse of natural capital was not, as in previous meetings, restricted to parochial discussions of economic incentives (MacDonald 2010a, 2010b). Instead, TEEB was well integrated across streams, making it difficult for any particular interest group to ignore. The heads of both UNEP and the CBD secretariat highlighted TEEB in the opening ceremonies, and it was a key presence in sessions devoted to ecological modelling, climate change, sustainable use, and parliamentary decision making, among others. In other words, it was widely distributed, widely promoted, and widely accessible.

That large plenary rooms—spaces in which large audiences could congregate—were reserved at particular times for TEEB-related presentations and that TEEB presentations were integrated into sessions organized by influential actors across the meeting indicated the intensity of the *work* that had gone into configuring a TEEB *network* prior to COP10 with the specific intent of foregrounding it during the meeting. It relies upon associations with event planners or sponsors who have the capacity not only to “direct” through the configuration of spaces of presentation but also to integrate certain perspectives into a program in ways that achieve visibility and presence for that perspective. These associations, which were established well in advance of the meeting, enabled TEEB to have a distributed presence at COP10 so that the performance of TEEB could occur in front of a diversity of audiences.

This orchestration structures the performance of the model in ways that reveal power relations configured through the agencement. By observing and tracking the distributed presence of TEEB during COP10, we could observe TEEB as a political project—an agencement that extends beyond its intellectual substance. We could see virtualism unfold in practice where alignment and articulation drew actors together not simply by sheer force of material domination but through appeals to particular interests.

The Virtual Reality of Natural Capital

At the end of the formal presentation of TEEB to the parties to the CBD, as the applause was dying down and people were rising from their seats, a senior executive of a prominent UN agency leaned over to Pavan Sukhdev and, presumably not realizing that his microphone was still on, uttered the

prophetic phrase “TEEB begins now!” This odd remark revealed COP10 as a critical turning point for TEEB. The transformation had multiple qualities: (1) TEEB was being institutionalized as a component of the CBD; (2) it was undergoing a metamorphosis from a study to an approach or a mechanism that would enable it to engage in performance and thereby draw more actors into its sociotechnical network; and (3) the results of its performance would create the conditions for the atomization and pricing of those “services” of nature not currently commoditized. To say that “TEEB begins now” suggests a shared understanding that what had occurred before the COP meeting was simply preparing the ground for the “real” work of TEEB.

As much as the performance of TEEB at COP10 can be analyzed as a virtual moment, TEEB did not begin at COP10 or at Potsdam. Indeed, TEEB and its role in the virtualism of “natural capital” *begin* with an ideological commitment to placing an economic value on nature—to remake nature into “natural capital,” a vision that began long before COP10. Contrary to the currency that seems to be accorded to TEEB, it offers no new economic instruments: techniques such as green accounting and valuation and calls to internalize externalities, even as they were contested, have long defined the competing fields of environmental and ecological economics (e.g., Costanza and Daly 1992; Costanza et al. 1997; Daily 1997; Ehrlich and Ehrlich 1981; Pearce, Markandya, and Barbier 1989).

While there may be little new in the economics that TEEB invokes, what is new is the purposeful alignment of particular actors—an authoritative managerial class—brought together around it, the production of a visionary to serve as the embodiment of TEEB, and the calculated manner in which it has targeted key audiences. TEEB’s institutional appeal lies in this sanction and the (re)packaging, (re)presentation, and (re)distribution of ecological and environmental economics as a product—an ostensibly implementable package designed, in relation to techniques of governance, to avoid complexity (and in doing so appeal to policy makers) and to easily adopt the reductionist managerial logics of “best practices” that accompany the operation and regulation of markets. If TEEB is the packaging and vehicle for performing economics, it is the *longue durée* of intellectual production that has produced a virtual reality of natural capital as an expressed image of the environment as a reservoir of capital, or “nature conceived in the image of capital” (O’Conner 1994a, 131). It is able to reproduce itself over time and space through the implementation of “regimes of investment” integrated in “a rational calculus of production and exchange” (Belamy Foster 2002, 36). Accordingly, it presents environmental problems as failures to account for or adequately value (i.e., price and cost) components

of nature. “The problem” in this vision is not with capitalism as a system of socioeconomic organization nor with markets as the basis for exchange and distribution but with a “nature” that has not been adequately priced.

In introducing TEEB at the CBD, Sukhdev described “the problem” as nature that has been economically “invisible.” This invisibility is a shared problem with a shared solution: “The economic invisibility of nature must end. . . . Governments must respond to the economic value of nature by changing policies. . . . Companies must respond to the value of nature by recognizing their externalities and adopting a different and more responsible forward behaviour.”⁹ The solution, in accordance with this definition of “the problem,” is to make nature visible as capital so that it can become part of the “rational system of commodity exchange” (Foster 2002, 35). Accordingly, realizing natural capital entails breaking the environment down into specific components—(ecosystem) goods and services—that can be alienated and brought into being as commodities, given an imputed price (TEEB would say a value), and subordinated to market mechanisms and policy instruments that use price as the basis for environmental protection.

TEEB and the Legitimation of Natural Capital

TEEB applies conventional practices of cost accounting to an “invisible” nature, simultaneously enabling other “market mechanisms” (e.g., PES, biodiversity offsets). As such, TEEB steps in to occupy sacred quantitative ground, providing the value determinations that “markets” and “payments” and “property swaps” require to be inserted into legal regimes of contractuality and moral spheres of equitable exchange. In this practice of accounting—or valuation—we enter the domain of Latour’s metrology (1987, 15), in our case, the making of nature as a regime “inside which facts can survive.”

The number as representation simultaneously holds and issues an appeal. It is discrete, it is easily subject to the algorithmic needs of models, and it communicates the authority of an imagined objectivity. What the number appeals to is distinct from (though integrally related to) the appeal that the number holds. In the latter case, it attracts through its capacity to legitimate and to make actors and their interests, needs, and responsibilities visible, with all of the accordant gains that visibility generates. In explaining their articulation with TEEB at COP10, for example, modelers spoke of an opportunity for their models to have a policy impact; activists/environmental groups saw an opportunity to use TEEB to reach policy

makers and make them see “how the world really is,” and ministers of environment sought an opportunity to demonstrate to ministers of finance that biodiversity does have a “value” figure that can be incorporated in national accounts. As one said, “In my budget I had 6 million pounds to address fungal diseases in honey bees. The Finance Department said get rid of it, and I said I could, but it would cost 190 million pounds. They asked why, and I explained the effect of fungal diseases on pollination and the cost of decline in yields, which had been quantified by our national accounts office. I got my 6 million pounds.”¹⁰

Much of this appeal of the number is bound to the authority granted economics and cost-benefit analysis, but it is also related to shifts in the context of environmental decision making as practices of neoliberal governance have subordinated ecological rationales to economic rationales. Yet, these rationales also demonstrate that the intellectual apparatus behind the number with all its assumptions and calculations is incidental. Its power to convince is what really matters. As the head of UNEP Media reflected, “TEEB’s gone from . . . a kind of interesting subject for environmental correspondents to one now where business correspondents and the politicians are getting the message. One [reason] of course is the numbers. Sheer numbers make one sit up in bed, don’t they?”¹¹ Like technologies of visualization, such as maps, models, and narratives designed to make nature legible (Scott 1998) and visible (Brosius 2006; Forsyth 2003), numbers create nature as understandable and approachable for policy makers and thus mechanisms for remaking reality. By packaging a series of numbers, TEEB appealed to policy, business, and public audiences not only to support conservation but also to help *create* the conditions for the emergence of a market for ecosystem services.

It is the claims made on behalf of numbers and the sanctioning effect of those claims that give us insight into TEEB’s primary claim, which is a moral one. TEEB leadership carefully crafted a message to seek win-win-win solutions that would simultaneously encompass the environment, the economy, and people. The constant refrain across TEEB sessions of nature being the “GDP of the poor” positioned TEEB, accounting, and the pricing of nature as projects that served the interests of “the poor.” Sukhdev argued, “The central concern of TEEB is that the economic invisibility of nature has . . . exacerbated the suffering of human beings, especially those at the bottom of the economic pyramid. . . . That is the biggest finding that TEEB has to present to you today.”¹²

In this explicit calculation, designed to appeal to development practitioners as well as conservationists, TEEB has become another moment in

conservation's long struggle to become relevant to the poor. Like many such efforts, it endeavors to illustrate how, via its commodification, conservation can become compatible with poverty reduction (Büscher 2010a). This utility of "the poor" in the promotion of the financialization of biodiversity is instrumentalist at root. In terms of degradation, biodiversity loss is greatest in areas subject to industrialization and urbanization, and that in fact is where we find the majority of the world's poor—those without access to land and without access to clean water or air. It ignores the fierce and often violent battles over property and property rights that market mechanisms open up and appeals instead to social justice as a moral quantity best pursued and distributed through the market. In making nature visible and legible, the number abstracts and decontextualizes socionature and subsequently reembeds it in society (McAfee and Shapiro 2010), translating socioecological characteristics into a "nature" that capitalism "can see" (Robertson 2007).

The crucial moral appeal of TEEB, however, lies in implicit assumptions about rationalism and policy making. During COP10, Pavan Sukhdev stated: "Economics at the end of the day is the currency of policy, and it's important to get the economics right. But economics at the same time is only weaponry. The direction in which you shoot is an ethical choice."¹³ The reliance of TEEB on rationalism for its own legitimation is readily apparent: "Understanding and capturing the value of ecosystems can lead to better informed . . . decisions; accounting for such value can result in better management; investing in natural capital can yield high returns; and sharing the benefits of these actions can deliver real benefits to those worst off in society" (TEEB 2009, 3). Sukhdev frequently repeated a phrase from management school texts: "What you do not measure, you do not manage."¹⁴ Trite as this sounds, it is significant, since it frames the question of legibility, or the way in which a world (i.e., nature) comes into being through the production and accumulation of "facts" about that world.

These comments are grounded in a crucial assertion that "business" and, more problematically, government have not been acting rationally—that in allowing the degradation of ecosystems and biodiversity, they have been undermining the capacity to accumulate wealth. Yet, rather than see this problem as malignant—as a contradiction of capitalism—it is viewed as a function of not having the right "information." As such, these are also claims regarding the morality of metrics, as if to say that what is fixed quantitatively can be acted upon qualitatively—if policy makers had the right (quantitatively correct) information, they would make the right (qualitatively correct, i.e., moral) decisions—and that rational decisions cannot be made in the absence of "the right information."

If TEEB is the rationalist device meant to produce nature as capital, the success of that alignment is strongly attached to the qualities of those performing it, and rationalism requires the embodied enactment of expertise to legitimate its authority (Carr 2010). Carrier and West (2009, 7) acknowledge this when they point out that some agents are better placed than others to conform the world to a virtual vision: “The visionary must be powerful politically and the vision must be grounded in a form of knowledge production that is powerful socially.” As the singular consistent embodied presence of TEEB, Pavan Sukhdev presented himself and was produced as a visionary for natural capital:

If you want to ask when the first glimmerings happened, it was when a friend of my wife’s asked me, “Why are some things worth money and other things not?” Economics treats . . . nature and its flows, its benefits, as externalities, and her question was very simple and very important. . . . I have kind of understood the issue, perhaps earlier than the average man on the street, and I just felt it was my duty to bring it out, to do as much work to develop this issue and understand why it is that we can’t seem to account for what’s valuable.¹⁵

These words position Sukhdev as a visionary. However, the production of a visionary also requires the sanction of other politically powerful actors. Where academic ecological economists failed to mobilize environmental institutions and organizations, Sukhdev has successfully directed the integration of their models into conservation institutions such as the CBD, conservation NGOs, states, and private-sector actors.

In many ways, the success of TEEB was tied to features that address the desire among CBD parties and other conservation organizations to engage with “nontraditional” actors.

Sukhdev’s credentials as a “conservation outsider” served to legitimate his expertise. As the UNEP media official stated, “The success of TEEB is [that] we have someone like Pavan who’s available all the time for press, for media, for interviews to get the message out, with the credibility of being a banker, right? He wasn’t from an environmental NGO, so he wasn’t part of the converted, although of course he has been converted.”¹⁶

As the TEEB visionary, the embodiment of expertise, recognized and sanctioned by a loose coalition of powerful actors, Sukhdev was able to help shift the CBD in a new direction. He reflects what Greenwood and Suddaby (2006) have termed “institutional entrepreneurs,” actors who support institutions that promote interests the actors value but that have

been previously suppressed by other actors or logics. During COP10, for example, as the prominence of TEEB became evident, side event titles changed, corridor conversations shifted, and high-level politicians struggled to reformulate their speeches in the language of ecosystem services and, more specifically, TEEB. Sukhdev frequently appeared on a variety of stages with other powerful actors, and his enactment of expertise and authority underpinned this capacity to achieve conformity—to enroll a wide range of actors across the event and beyond it, across networks that spanned private, nonprofit, and public sectors. Ultimately, TEEB cannot perform, cannot become part of the agencement, and cannot do the work of realizing the virtual reality of natural capital without the voice(s), like Sukhdev’s, that lend it the sanction of expertise and authority, the stage(s) upon which the enact expertise, and the audiences for whom to perform. This is what makes virtual moments like TEEB and instances like COP10 integral to, and integral to understanding, the production and legitimation of “natural capital.”

Conclusion

So, as nature has changed in human eyes, the ways that we deal with nature and each other have changed as well.

—JAMES G. CARRIER and PAIGE WEST, eds.,
Virtualism, Governance and Practice

Bringing the world into being as natural capital is an ongoing and dynamic exercise in virtualism, where TEEB is a moment in the *longue durée* of the virtualism of natural capital. If virtualism is the process through which “reality” is made to conform to virtual reality, we describe a moment in the virtualism of natural capital and examine an emergent political project—TEEB—as one key step in conforming image to reality. However, describing the emergent implications of that moment requires a capacity to situate it as an agencement that maps the heterogeneous ensemble of actors, institutions, and devices (the apparatus) engaged in the production of natural capital and the dynamic and contested relations among them.

Carrier argues, “What distinguishes economic abstraction is the combination of its institutional power and its tendency to slip into virtualism. This is the conscious attempt to make the real world conform to the virtual image, justified by the claim that the failure of the real to conform to the ideal is a consequence merely of imperfections, but is a failure that itself

has undesirable consequences” (Carrier and Miller 1998, 8). We do not disagree with this, but our analysis of TEEB suggests three modifications:

1. The institutional power Carrier highlights does not precede virtualism but is also brought into being as virtualism realizes some measure of “success,”
2. Virtualism is not something that is slipped into. The “slip” is a march—it is orchestrated, structured, scripted, and contested. Virtualism is achieved through performance that facilitates the reproduction of an agencement (i.e., the articulation and alignment of actors, institutions, devices, technologies, and methodologies) (Hardie and MacKenzie 2007).
3. Actors know they are engaged in performance and acts of articulation and alignment. While virtualism begins with an ideological commitment, it must also be achieved through virtual moments that are linked together in an ongoing process of reproduction grounded in conditions of contestation. It relies on processes of alignment and articulation that draw powerful actors together to subsequently enact that virtual reality with an aim to establishing durable associations in ways that institutionalize and subsequently operationalize those models to convert abstractions into reality.

It is through rendering a valued nature “legible” (i.e., priced and costed) for key audiences that TEEB, as a component of natural capital, has been able to mobilize a critical mass of support ranging from modelers to policy makers, parliamentarians, and bankers. In its acts of reducing the complexity of ecological dynamics to idealized categories and in claiming to be a quantitative force for morality, TEEB is engaged in the production and circulation of practices designed to conform the “real” to the virtual. Understanding these acts of conformity, we argue, requires attending to the spaces where the performance of this model and the “facts” it produces are made apparent. The CBD is one such site where the discursive strategies through which TEEB mobilizes the alignments and articulations required to overcome obstacles to the realization of “natural capital” are readily apparent.

Indeed, it is these alignments and articulations that are a condition of TEEB’s production. Contrary to what proponents would assert, it is the network of attached actors that is TEEB, not the substance. As we pointed out above, the ideas contained in the TEEB study are not new. What is new is the packaging, its attendance to specific audiences, the assemblage (institutional conditions) that contribute to its prominence (presence), and

the capacity of those conditions and the presence they provide to draw actors to the package. TEEB is more than simply an ostensible product “for sale” (or, as Pavan Sukhdev frequently repeated, “a gift”), it is a packaged good, containing premises, assumptions, models, and predictions, that is intentionally networked and articulated with a broader group of actors and devices.

It would be an overstatement, however, to exaggerate the possibility of such calculation, for as projects like TEEB become dominant—as they are institutionalized—choice is constrained and articulation becomes more likely, especially if smaller actors seek to retain legitimacy and funding within the network of institutional environmental governance (MacDonald 2010b). As we witnessed during COP10, sanctioning TEEB as a core mechanism of the CBD is one way to lend it institutional coherence and to mobilize alignment and subsequent articulations. The ramifications of this are difficult to predict, but the analytic utility of witnessing TEEB being converted from study to tool is that it provides the ability to track its deployment across space and to make more sense of the relations involved in its circulation and both the policy and material ecological effects of that deployment. Since the rollout of TEEB at COP10, for example, it has rapidly circulated through subsequent meetings related to biodiversity. A case in point was the January 2011 Symposium on Caribbean Marine Protected Areas, held in Guadeloupe, where a representative of *Fonds français pour l’environnement mondial*, Paris (the French focal point for the GEF), referred to “Nagoya, where a major event was the publication of a study of the valuation of ecosystems [TEEB], made public during the convention,” and the moderator introduced TEEB to the assembled audience of protected area managers, academics, and state and NGO representatives as “the international bible of socioeconomic assessment.”¹⁷ The biblical status that TEEB seems to have earned so quickly reflects the shifting ideological and material landscape of biodiversity conservation, where a new “reality”—a new ontology—is being brought into being by reordering relations of power around the ideological project of “accounting for nature” and the political project of convincing business and policy-makers that nature is valuable because it can be priced (see also MacDonald 2010a).

While we have restricted much of our analysis to a particular project in the production of natural capital, it is important to highlight the relations between the processes of alignment and articulation that we have described here and how they reflect the containment of an effective oppositional politics and the very possibility of imagining natural capital. In a volume on

virtualism in conservation projects, Carrier and West (2009, 1) recognize environmentalisms as different kinds of “ways of thinking” that “intersect with the world and people in it” and, consequently, the ways in which people identify and evaluate their natural surroundings, but they give fleeting mention of the ways in which environmentalism has become a vehicle that operates in the interests of capital accumulation and a vessel to be claimed in the legitimation of distinct projects. Once seen as a singular and distinct threat to accumulation, “environmentalism” has become in practice a politics that can be enlisted, contained, and directed to the interests of capital accumulation.

TEEB is indicative of this process. Its rhetoric of crisis and value underpins a larger political project that aligns capitalism with a new kind of ecological modernization in which “the market” and market devices serve as key mechanisms in practical efforts to conform the real and the virtual. The consequences of this, however, are material and have been expressed by others who have described how the ascendance of neoliberal conservation has shifted the locus of decision making in international conservation (Corson 2010; MacDonald 2010b). Nowhere is this more apparent than in arenas of international conventions, where states are granting their authority not just to private investors but to speculators who, desperate for a new and profitable investment frontier, are sinking their capital into the promise of nature and speculating on its scarcity, all the while describing their actions as environmentalism (Sullivan 2011a). TEEB is a step in this process, legitimating the market as the means through which biodiversity is conceived, stabilized, and exchanged; it is the realm in which economic rationale, in realizing new forms of accumulation, displaces ecological rationale. Within this realm the financial modeling of nature provides critical new investment opportunities, and the construction of environmental services as commodities opens them up to speculative behavior, as calls for internalizing environmental externalities are transformed into the “optimistic embrace of the returns that might be captured if this ‘value’ of environmental externalities can be priced and traded” (Sullivan 2011a, 7). We argue that TEEB is playing an important role in legitimating and circulating the narratives, images, and ideas of nature essential to these new speculative nature markets.

As projects like TEEB become instruments for capital expansion, they become agents of nature’s restructuring, underpinning what Bram Büscher (this volume) calls “one of the biggest contradictions of our times”: the idea that “nature can be conserved by increasing the intensity, reach, and depth of capital circulation.” That contradiction is the virtualism of natural

capital. Increasingly, modes of conforming reality with the image of natural capital circulate in popular culture and the daily economy of life. As travelers purchase carbon offsets to assuage the “guilt” of flight and as schoolchildren come to understand trees first and foremost as services in the reproduction of capital accumulation, we move closer to the virtualism of natural capital.

Notes

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1. Bernard Payne, question put to Al Gore in the *Independent*, July 7, 2007; response to Bernard Payne from Al Gore in the *Independent*, July 7, 2007. Note that Lohmann (2009) also cites this quote by Al Gore.

2. Sukhdev also chairs the World Economic Forum’s Global Agenda Council on Biodiversity and was a speaker at Davos in 2010 and 2011. He serves on the boards of Conservation International and the Stockholm Resilience Centre.

3. Hall defines “articulation” as both the joining together of diverse elements and the expression of meaning through language. For Hall, articulations are made in historically specific contexts. They are temporary, contingent on material and discursive factors, but never determined. We use articulation to refer to both the realization of that affiliation through the linking of their ongoing activities with the agencement and the publication of that linkage (aurally, textually, and visually) in ways that extend the presence and contribute to the strength of the agencement.

4. Performance includes the scripting, structuring, and staging of economic expertise. By alignment we mean the orientation of actors toward the virtual reality out of which the virtualism is created, in our case, natural capital. Alignment is facilitated through both legibility and visibility, when actors are exposed to the configuration of power around what they see as particular projects and envision ways in which their multiple interests (personal, organizational, institutional, etc.) can be met through an affiliation with the agencement.

5. Based on *The Stern Review on the Economics of Climate Change*, a study led by Sir Nicholas Stern, head of the UK Government Economic Service and advisor to the government on the economics of climate change and development.

6. Additional members of the market group included Dan Suarez, Shannon Greenberg, and Juan Luis Dammert Bello.

7. SBSTTA 14, -XIV/4 (c) 8, <http://www.cbd.int/recommendation/sbstta/default.shtml?id=12251>.

8. UNEP/CBD/WG-RI/3/L.9, “Updating and Revision of the Strategic Plan for the Post-2010 Period,” May 28, 2010, <http://www.cbd.int/sp/notifications/>.

9. TEEB press conference, 10th Conference of the Parties to the Convention on Biological Diversity, Nagoya, Japan, October 20, 2011.

10. "GLOBE International: Legislative Approaches to Recognizing the Value of Biodiversity and Natural Capital," COP10 side event, October 27, 2010.

11. "TEEB 4 Me: Communicating the Value of Nature," Ecosystem Pavilion, COP10 side event, October 25, 2010.

12. TEEB press conference.

13. *Ibid.*

14. This phrase has been repeated so frequently by Sukhdev that, despite the fact that it has been circulating for decades, some people in the conservation world have begun to attribute it to him.

15. "Dr. Pavan Sukhdev on the Invisible Economy," YouTube Channel of Corporate Knights: The Canadian Magazine for Responsible Business, http://www.youtube.com/watch?v=VZWnMaX_bsY. Sukhdev is widely distributed in video as the face of TEEB.

16. Nick Nuttal, TEEB 4 Me.

17. We are grateful to Noella Gray, University of Guelph, for allowing us to use her notes of this encounter.