

1 *The Singularization of Everything*

I began writing this book on an iPad.¹ The device arrived on my doorstep in a brown box just like millions of other iPads arrived on millions of other doorsteps. I have no relationship to any person who assembled, sold, or delivered it. I do not understand what makes it work, could not name its parts, and do not know their origins. I am a user in the most pejorative sense; I take without contributing.

Yet I call it mine. Why? What special claim do I have to this thing? Perhaps it is my feeling of dependence, the custom text burnt into its aluminum shell, the personal information it contains, or the potentially useful work that I do with it. Attachment, identification, privacy, and public utility are good reasons to allow someone to own a thing, but the only reason that matters to Apple Incorporated is that I paid for it.

This is global capitalism's prototypical arrangement. Consumers and producers are mediated by brands and currency. Knowing little about each other, we are chained together by complex products that no single person understands. In this global capitalism, we pay money for products without knowing the origins of either the money or the goods. We produce without knowing consumers and consume without knowing producers. When a television reporter interviewed a worker who cuts plastic burrs off iPads in a Foxconn factory, the worker had never seen or touched an assembled tablet.² Her perspective of the product was even more limited than mine, and she makes it.

The Richness of Things

Talking about ownership, commodities, and global capitalism limits the range of things that we imagine, and the range of relationships that people can have with these things. This is a necessary consequence of my effort, at least at this stage of the argument, to focus on tangible and relatable examples. However, different societies and different objects

within our societies are not all treated similarly. I am not, for example, speaking of the exchange of gifts to enhance one's prestige, such as those which are called Moka among the Highlands people of Papua New Guinea. The social regulatory features of such person-thing interactions bear little resemblance to commodities. From an anthropological perspective, these differences warrant recognition, particularly because observing the diversity helps remind us that the relationships between persons and things change with context, as Strathern has described in the context of the Highlands.³ If I limited this text to contexts in which people already believe that "The thing itself possess a soul," as Maus described, the book would miss the opportunity to think critically about today's dominant modes of economic organization.⁴

Focusing on a finite and culturally circumscribed expression of what it means to have and own a thing highlights the increasing dominance of a particular form of exchange and its attendant problems. Status-gift cultures are not being promulgated as the cross-cultural standard for person-thing relations, but relations characterized by social distance between transacting parties and a broad disregard for the origins of things have diffused into a range of contexts and products. This propagation alone motivates research on how such interactions can be managed responsibly. Moreover, in contrast to localized transactional cultures, there is a special need to situate commodity exchange within a global production network and to map out the kinds of responsibilities that such relationships require.

Even while focusing on commodities, it is sometimes important to return to the diverse anthropological record of cultural differences in exchange. Business ethicists Donaldson and Dunfee have written most extensively on global businesses' obligations to respect local cultures. They contend that businesspeople must understand local cultures and values in order to behave responsibly within them. My approach will affiliate these values with the moral histories of objects. It will ask managers and employees to act as stewards of things, as evaluative actors who seek to understand the consequences of the way that they deal with things and to improve these consequences in ways that esteem the moral systems that they value. I make no attempt to provide a universal account of how responsibility ought to be in every society. The positive argument that I advance for taking care of things speaks to

a specific culture of exchange that seems to suggest the opposite. Whether this “object stewardship” is appropriate within other economic systems is beyond the scope of the present argument. There is no reason to believe that every possible economy can be governed by the same normative structure, and no reason that I need to argue in such general terms. It should be enough to decide what form of accountability would be adequate for a global economy and its direct participants who trade in fiat currencies for items produced by strangers.

These kinds of economic relationships make it especially difficult to find meaning in things, but that task is difficult in any case. The category of things is inclusive of literally everything. As such, it is not easily compressed or sorted. Ideas, bosons, animals, and people are all things. Chapter 5 is dedicated to this richness. It tries to generalize the ways in which people can understand and care about things and their consequences, both instrumentally and as a matter of appreciation that goes beyond use value. While books written for social scientists on materialism tend to launch right in with this diversity, our course is guided by a more practical approach. If I can convince you that things help us to solve moral problems, and if I can convince you that other available solutions are not adequate in that they fail to establish a comprehensive, reliable, and compelling normative order for complex economies, then it will make sense to look more carefully at things. Only after satisfying this basic requirement can the range of objects be expanded beyond the most obvious products that already hold the attention of the business class.

This argument will develop more fully in later chapters, but for now I need only summarize the view that follows with a few main points. First, things are capable of both bringing people together and keeping them apart.⁵ Things can be bridges or fences, water coolers, or office doors. The bridging and blocking capacities of things are also manifest in their relationships to other things. Plastic keeps the acid in a battery from escaping; metal allows the charge to flow through the contacts. Second, dependences on things are diverse and difficult to negotiate. Some changes would require massive reconfigurations because things are interdependent. Electric and hydrogen-powered cars are examples of things that are not easily adopted because of the network infrastructure that they require. At the same time, some networks persist long after they seem to be obsolete. Fax machines are still

common in newsrooms and offices despite the outdated technology that they utilize. Third, despite (and because of) object dependence, people know a lot about things; whether they possess the right moral knowledge is an open question, but the fact that people study objects in order to pursue their personal projects and in order to meet social expectations seems beyond debate. Jokes about complicated remote controls aside, people are expected to negotiate interactions with myriad objects, from ensuring that a parking brake is disengaged in order to drive to knowing that cast iron pans cannot be left with water in them. If it can be granted that objects are linkages and barriers, that things are reliant on other things, and that people already expend a great deal of cognitive energy to understand certain things, then we can begin to understand how commodities differ from objects with histories and how some processes resist commodification.

Collapsing Commodities with Connections

From time to time, investigative journalists, academic researchers, and labor activists create shortcuts across supply chains to show consumers the lives of producers. There are endless variations on this theme tracing objects upstream and down, following iPads,⁶ illegal drugs,⁷ maps,⁸ manhole covers,⁹ food,¹⁰ clothing,¹¹ shoes,¹² guns,¹³ contraband cigarettes,¹⁴ pharmaceuticals,¹⁵ and money.¹⁶ These reports remind us of our connections to others. They also suggest a mechanism for change: by focusing on the people and places where products originate, we might also take an interest in the unmitigated costs of their production.

At the heart of the journalists' approach is an old idea that specific objects have embodied meaning. Long-established religious and cultural traditions view objects in this way by treating them as sacred and irreplaceable. In legal traditions, objects also take on embodied historical meaning. Guns used for murder, for instance, are destroyed rather than resold. Doing so sustains the legal concept of the deodand, a harm-causing object that must be forfeited to God or the crown because of its history.¹⁷ One justification for destroying these guns relates to the significance that they have to victims. Another derives from their physical uniqueness. Each gun leaves a distinct signature on each bullet fired from its barrel. Reusing the gun would make forensic evidence related to that gun more difficult to interpret.

Within the law, objects have also been treated as meaningful causes, a practice that dates back to the Roman Empire and can be followed through numerous common law traditions. The legal tradition of noxal surrender allows a person who has been harmed by another's property to claim that property as hers (or in those times, his).¹⁸ Oliver Wendell Holmes claims that this concept began with taking vengeance on objects: a family's right to burn a tree from which a branch fell and killed a kinsman is actually a right to punish the tree.¹⁹

Though legal practices have evolved to focus on intention, causation, and restitution, it once made sense to view nonhuman objects as bearing moral responsibility for the consequences of their motion, and to pay a fine according to the price of the harming object rather than the cost of the harm done. These old ways may seem dead, but today's conscientious consumption gives them new cosmopolitan life within a universalizing ethic of object stewardship. The same logic that would punish a tree for a person's death would also find an iPad to be tainted if someone was harmed while producing it.

In the next section, I will begin to deal with objects as causes. One way to do so is to focus on singularities, on specific things and the outcomes with which they are associated. Notice the distinction between causes and agents. It is entirely possible for an object to be a causal factor in an outcome even though it is incapable of intending that outcome. Many objects are incapable of agency or they are manifestations of someone's intentions who is long dead. Still, the fact that the agent is not proximate does not divest the object of the properties that promote certain uses according to its inherent or designed function. Some trees are useful for lightweight boats, and others for trusses. A tree will never express a preference for being a bat, dresser, or toothpick, but its characteristics can nevertheless cause it to be used in a certain way.

Singularization

When we think of things as causes, the object becomes a vessel of virtue or blame: an object that has harmed others should be worth less than an object that has helped others. To make sense of this way of understanding objects, we have to treat each thing as a distinct entity. Accordingly, my iPad is unlike any other because it connects me to the individuals who made it. The iPad's value derives from its role in

their lives, not just from its role in my life. Following the terminology of economic sociology, I will describe this logic as “singular value,” and the objects to which it applies as “singularities.”²⁰ Singular value contrasts with commodity value because functionally similar things can replace commodities, whereas singularities cannot be replaced by mere substitution (they are not fungible).

Some objects are almost universally recognized as singularities. Persons and pets are obvious examples of items that are not substitutable for similar alternatives. Original works of art are a more applicable example that derives from human craft. Given the singularity of artwork, it is not surprising that some of the most influential ideas about the social origins of objects emerged in the thought of one of the nineteenth century’s great art historians. John Ruskin wrote of wealth, value, and the nobility of life. These values gain importance both as an end and as a means. Consider Ruskin’s critique of what he calls “servile ornament”:

You can teach a man to draw a straight line . . . with admirable speed and perfect precision . . . ; but if you ask him to think about any of those forms, to consider if he cannot find any better in his own head, he stops; his execution becomes hesitating; he thinks, and ten to one he thinks wrong; ten to one he makes a mistake in the first touch he gives to his work as a thinking being. But you have made a man of him for all that. He was only a machine before, an animated tool . . . Men were not intended to work with the accuracy of tools, to be precise and perfect in all their actions. If you will have that precision out of them, and make their fingers measure degrees like cog-wheels, and their arms strike curves like compasses, you must unhumanize them.²¹

Ruskin’s argument applies well beyond the sphere of art. His critique generalizes to anything we esteem without appreciating the treatment of those who made it. What is most important for the present account of singularization is that Ruskin sees in each work the kind of life that its creation allowed its maker to live. The object connects us with those who made it, and the appreciation that we show the object applies also to the beauty or ugliness of its origins.

Normally, the determination of whether something is or is not a commodity is based upon the qualities of the thing and the relevance of such qualities to a potential purchaser.²² Classic commodities include foodstuffs like wheat, corn, and soybeans.²³ They are commodities

because their quality is indistinguishable within a given market. Granted, it is technically possible to distinguish these foods in many ways, including moisture content, genetic makeup, and pesticide use. But within a given market, all of these attributes may be disregarded in order to act as if each grain is like all the others. Because one cannot distinguish between two grains of wheat by taste,²⁴ we treat them as interchangeable and group them by volume without distinction.

Ethics Against Commodities

In a technical sense, commodities are defined by their fungibility, the fact that they can be freely replaced without a distinction in value. If most consumers are truly indifferent and incapable of distinguishing between two similar things, we would say that they are fungible. But this practical indistinguishability does not answer the moral question as to whether we ought to treat every grain of wheat the same. In fact, as Ruskin shows, the discriminating logic should run in the opposite direction. Whether an object can be exchanged with another depends on whether there are salient moral attributes that ought to matter. If there are good reasons to distinguish between objects, then they are not fungible. Suppose that you were presented with two identical and equally clean knives. One was used in a murder; the other was not. Science provides no reason to distinguish between them: they are equally sharp and sanitary, and equally capable of being used at the dinner table. But whether they are understood as being identical is a choice about the meaning of things. Treating the knife as a tainted object may not alter the fate of its victim, but the general practice of acknowledging the moral histories of things can become a powerful motive in a responsible economy.

Distinguishing between objects based upon their histories is not only a negative category. Objects sometimes take on a positive valence as well.

What matters most is not the world as it appears to our senses. Rather, the enjoyment we get from something derives from what we think that thing is. This is true for intellectual pleasures, such as the appreciation of paintings and stories, and also for pleasures that seem simpler, such as the satisfaction of hunger and lust. For a painting, it matters who the artist was; for a story, it matters whether it is truth or fiction; for a steak, we care about what sort of

animal it came from; for sex, we are strongly affected by who we think our sexual partner really is.²⁵

Pleasure often derives from such distinctions. Using examples ranging from sacred objects in Afro-Brazilian religion to forged paintings, Bloom argues that objects take on essential and unique characteristics through their special histories. These characteristics define the objects' value.

I will illustrate a subset of these processes later using contemporary cinematic mythologies deployed to captivate audiences and sell toys (see *Singularizing Narratives* in Chapter 2). At present, it suffices to note that both pleasant and unpleasant nonphysical characteristics can be personally and interpersonally significant object attributes. As Simmel discusses in the context of money, society is capable of endowing objects with value irrespective of the useful material properties of the things that it valorizes.²⁶ Numerous psychological and economic studies document these processes.²⁷

What is not well described by this experimental research paradigm is the political, economic, and ethical conception of responsibility that emerges when groups of people attempt to consistently apply a moralizing perspective to supply chains. Many consumers have come to believe that distinguishing between similar objects is a matter of moral consequence, and that differences in the human and ecological costs incurred in an object's production ought to be a factor in the object's price and value. For them, this is true regardless of whether an object is practically substitutable because moral valence overwhelms an object's commodity status. For conscientious consumers, avoiding irresponsible products is a part of living responsibly.²⁸

Trees, Toys, and Gold

It is not only conscientious consumers who care about specific objects. Singularization is a pragmatic way to understand the world, and this logic is already applied commonly in many organizations. This chapter describes the manifest concern for objects in three industries. Forestry is the primary example, and the discussion of trees is twice as long as the discussion of either toys or gold. Together, these three topics illustrate the range of supply chain stages where singularization

Table 1.1 *Morality-Adjacent Product Descriptions*

Homemade	Farm fresh	Authentic
Handmade	Sustainable	Artisanal
Made in America	Nontoxic	Natural
Community supported	Green	Responsibly invested
Locally grown	Family owned	Organic
Recyclable	Reusable	Biodegradable
Made with love	Fair trade	Sweatshop free
Cruelty free	Worker owned	Free range

makes sense, and the differences in the way that objects are perceived, commodified, and singularized.

Let us begin with the basic case for objects being treated as unique according to their origins. Most people have things that they would rather not sell or replace with a copy, and many people show an interest in products because of their unique histories. Marketing helps to sustain these product conceptions. Consider the lexicon of marketing claims that supersede or sidestep the functional properties of products, elaborated in Table 1.1.

Many of these claims are linked to product quality. Handmade bicycle frames were long thought to be better than machine-built ones. Homemade cookies taste different from mass-produced ones. But the distinctions that these claims introduce are not strictly related to functional qualities. Otherwise, handmade bicycle frames would say, “stronger, lighter, and more durably welded,” and it would make no sense for a computer manufacturer to advertise the nontoxicity of the devices it sells. The claims communicate a complex set of value-laden concepts, many of which provide no benefit to a consumer, unless the consumer is interested in limiting harm and providing benefit to others.

Mainstream firms increasingly invoke such narratives to distinguish their products from the competition and to resonate with conscientious consumers. The claims are not limited to sustainable products and fair-trade goods, but these markets are particularly prone to the language of origins. Though a singularity logic is implied by taking an interest in product life cycle considerations, the sincerity of this interest is not a foregone conclusion.

Indeed, framing origination attributes as properties of brands, rather than products, runs the risk of negating the meaning and responsibility latent in object histories. In many cases, the actual attention to a product's life cycle goes no further than simplistic marketing pitched to sate consumers' consciences. Nor does the interest in origins provide a path to product singularization: products are still usually viewed and governed as commodities. Sometimes it even seems as if singularity value is being converted into commodity value.

The fact that origins are commodified does not negate the intention to take responsibility for product sources. It is likely that many consumers genuinely intend to make a difference, and so do many firms. When firms forgo profit and consumers pay a premium for a given product, they prove these intentions, particularly when they do so without fanfare. But even the most beneficent firms and consumers are only willing to incur finite costs.²⁹ Moreover, many firms are not especially interested in the internalization of upstream externalities, the care of distant workers, or sustainable production, because taking on these responsibilities greatly complicates their business activities.

Though it is often difficult to determine what firms intend (or whether firms are even capable of intention), we can ascribe motives to firms based upon the effectiveness of the means that they choose. The dominant purchasing strategy for many firms, which focuses on minimizing costs through a competitive global supply chain, is a deficient means for the internalization of upstream social and environmental costs. Whatever its merits, a competitive global supply chain increases complexity and uncertainty while reducing accountability for nonobservable product attributes. Global supply chains can control prices and (with some effort) maintain quality, but other features that cannot be measured with the physical attributes of an object and controlled with purse strings are not so easily guaranteed. This includes many of the product claims listed above, most of which are difficult for a consumer or globally sourced firm to check. Important moral considerations of an object's singular value suffer from this uncertainty.

If the logic of this contradiction is not obvious, consider the competing objectives of three mutually exclusive preferences: protection against supply chain disintermediation, increased competition, and code of workplace conduct compliance. Take college apparel as an example. Brands want to decrease the price of their factor inputs, which they hope to do through competition. Universities want to

ensure that their codes of conduct are adhered to, and they are also happy to receive revenue from licensees that sell apparel with their logo. Intermediaries connect brands with producers so that brands do not always know which factories make which of their products. To guarantee code compliance, you need to know which factories are making your apparel. To protect competition, you need the possibility of moving production between factories. And to protect an intermediary's margin, you need to ensure that customers cannot identify suppliers or buy directly from them. Of course, some forms of supply chain policing are still possible, but the ends of competition and intermediation work against a brand's capacity to guarantee workplace safety and adequate wages.

The academic literature on global supply chains generally pits the challenges of maintaining supply chain governance³⁰ against the profitability of manufacturing in places where regulation is weaker and wages lower. The limits and potential of supply chain governance within the global economy continue to be a subject of considerable debate, but it is clear that variations in strategies for monitoring and maintaining private governance arrangements can cause divergent outcomes, as Graeme Auld has observed in his work on the governance of forestry, fisheries, and coffee supply chains.³¹

Looking closely at supply chains tends to require an industrial and geographic focus. Here, I consider the supply chains of three specific products, trees, toys, and gold, in order to illustrate some of the questions that arise when one begins to think of objects as singularities and to appraise their value accordingly. The observations are organized around a set of critical exchanges regarding the nature of object value rather than a more general account of how complex production networks are best managed.

Trees, toys, and gold provide a useful diversity for this inquiry. The interests of trees and wood fiber products are biologically and ecologically defined. Treating them as singularities begins with understanding the ecological interdependences that surround them. Toys, in contrast, are highly abstracted from their raw ingredients: one does not normally think about where toys come from or the materials of their components until a safety concern causes scrutiny. The extraction of gold, like trees, may also cause significant ecological harm, but unlike trees, gold is rarely used in disposable products. Instead, it serves as a medium of value exchange. Though there are lessons to be learned by

examining the entire life cycle of all three objects, I focus on the ecological origins and extraction of trees; the manufacture, use, and disposal of toys; and the exchange of gold. Together, these phases constitute a complete product life cycle across the three different products. The cycle includes raw material extraction, manufacturing, exchange, use, and disposal.

The Forest and Its Trees

A complex set of biological motives drive natural objects like trees. Their lives, and indeed life in general, are sustained through absorption of nutrients, growth, and reproduction. Trees grow within communities that cycle and share resources. They are useful to other organisms within the forest and to persons within or outside of the forest. Though biological products from many habitats could be the focal subjects of this analysis, trees are a particularly important case given the ecological and economic debates around them.

Throughout the twentieth century, but particularly since the 1960s, American forests have been a contentious terrain over which ecological and economic interests wage a battle for control. Histories of the United States Forest Service document the rivaling visions of how the forest should be used and protected. The Forest Service has optimistically maintained the belief that ecological and economic ends are not mutually exclusive.³² Nevertheless, this belief is contravened by the ongoing conflict between ecological foresters and commodity foresters who understand the value of trees in entirely different ways.

The core tenets of ecological forestry include the maintenance of structural complexity and species diversity; the recognition of complex interaction between water, soil, nitrogen, and biological cycles; the management of land tracts to avoid segmentation; the maintenance of soil to sustain ecological capacity; careful planning regarding road use; and periodic tree harvesting in ways that maintain local diversity in size and species. Commodity forestry prefers homogenous stands of genetically similar trees with faster growth rates, the use of herbicides to control other plants, convenient road access to reduce transportation costs, and either clear-cuts at a given site or the extraction of only the oldest and most valuable trees from a structurally complex forest. Each of these approaches has its own scientific movement, one of which is interested in monitoring the broader ecological community and

recreating the natural diversity of old-growth forests, the other in addressing the agricultural problems of monoculture.³³

As a consequence, they present competing sets of facts. Ecological foresters perceive synergies between different species that help make forests strong, resistant to disease, and useful for purposes other than tree production. Commodity foresters observe the near-term benefits of organized stands of trees that are accessible because other plants are not allowed to grow. Each of these orientations operate as a method of wood fiber production; they sell the same product. However, they are employed on separate parcels of land and often within separate ownership structures. It can be generalized that private forests are most often managed as commodity forests and federal forests lands are torn between ecological and commodity management strategies, but there are exceptions, and strategies vary by region as well.³⁴

Whereas economic models of forest management encourage a sharp contrast between these management strategies, I aim to articulate a theory of value that would motivate a convergence so that all forests could be managed with the same spirit of ecological respect. I wish to suggest that private forest managers should be motivated to grow diverse, structurally complex, and ecologically stable stands that rival the aesthetic value placed upon old-growth forests, if we can get the economics of forestry right.

Such a unity of interest would be unprecedented given that foresters face a hitherto intractable conflict. Commodity forestry and ecological forestry comprise two very different ways of thinking about the same objects, creating a division deeply rooted in cultural values, in participants' sense of forest meaning.³⁵ Within the present account, the conflict between ecological and commodity forestry helpfully illustrates the difference between managing singularities and commodities. The recent success of green labeling further demonstrates the salience of supply chain governance and the corruptibility of some of these approaches.

The singular value of trees generally fits into two categories: first, the value of trees in their ecological settings and the good they do through their natural life cycle of growth, reproduction, death, and decomposition; second, the value of trees in economic supply chains, including the benefit of wood fiber products, the harm of unsustainable forestry practices, and the likely fates of their eventual disposal. The first category establishes the ecological consequences of removing

a particular tree, or group of trees, as the opportunity costs of extraction. The second category establishes the consequences of the remainder of the product and by-product life cycles in production, distribution, consumption, and disposal. Wood fiber is used for diverse products, from paper to turpentine. Across this range, there are variations in how much social value we derive from the trees we cut down. The second category of singular value represents the range of benefits and costs that derive from private attempts to make trees economically useful. Bringing these considerations together will allow us to track forestry benefits and costs by focusing on the things themselves, on the way that they are used, and on the systems of relationships with other living things surrounding them. Accordingly, the next section focuses on trees' situated value in a forest and then the subsequent section turns to trees' value in the economy.

Trees in Forests

Commodity forestry is an agricultural application of industrialization. It simplifies a complex ecosystem into a narrow productive system with one main output. The industrial approach to forestry is intensive, both in the resources it uses to harvest and in the way in which it seeks to entirely define the ecology of the forests that it cultivates. To the commodity forester, land has the potential to yield a certain amount of wood fiber, measured in board feet. The rate at which the land yields wood, less the cost of bringing that wood to market, determines the profitability of the enterprise.

In its narrow use orientation towards the land, commodity forestry is not interested in the ecological value of any organisms that live there. Here I distinguish two forms of value discussed extensively later. Ecological value is conferred by a system of relationships to other entities, both persons and things. Commodity value derives exclusively from the market income of a standardized product or resource. The simplifying narrative of commodification defines value narrowly and empowers key organizational actors in the promotion of commodities to the detriment of other objects.

What other value might we find in forests? This depends both on how we relate to the forest and how we understand the way that the forest relates to itself. In a sense, "the tree is not an object at all, but a certain gathering together of the threads of life."³⁶ We are trying to expand the

way that we understand objects as things to represent the life that they gather together. Commodity forestry makes no such attempt. Instead, to sustain commodity forestry, practitioners must disregard both the forest's complex potential as a diverse ecosystem and its complex potential for local human communities. Indeed, both are challenges to be overcome.

Diverse forests provide diverse products to whomever or whatever lives near them. Yet many human communities do not practice the kind of foraging that makes forests' diverse products useful. Using these products requires proximity, knowledge of where to find and how to make use of different plants and animals, and the time to do so. In the extreme, some indigenous foragers sustain complex diets, shelters, and cultural traditions entirely using forest resources. Amazonian indigenous communities, for example, meet their needs using the forest with very limited demand for wood fiber.³⁷

Indigenous forest communities establish one end of a spectrum of interdependence with forest ecologies, yet it is worth noting that indigenous people have numerous and complex relationships with many different ecosystems. Not all indigenous communities are interested in promoting forests. M. Kat Anderson describes how California's dominant forests of Douglas firs were seen by Yurok basket weavers as encroaching on grasslands.³⁸ The Yurok people burned grasslands to push back the edge of the forest because grasses provided important seeds, foods, and cordage materials. There is hardly an ecosystem in the world that has not been somehow managed and subjugated by human preferences.

Anthropologists accuse environmentalists of politicizing the position of indigenous communities to sustain a somewhat deceptive narrative about pristine nature and sustainable practices. In fact, any community can be placed along a continuum in terms of its relationships with local habitats, ranging from near-complete dependence upon a single ecosystem to the complete denial of an ecosystem's complexity in favor of a single commodity output. Often, people are partially reliant on nearby forests, which provide seasonal nuts, berries, and mushrooms alongside commercial timber. Forests also provide other services like shade on hot summer days, the capacity to absorb pollution from nearby industry and transportation infrastructure, and the sequestration of carbon that reduces atmospheric carbon dioxide levels. While few people depend upon forests in their full complexity, many benefit

from multiple aspects of forests and the ecological diversity within them.

I have focused on the value that people find in forests, but I am also interested in the ecological utility that different organisms find within a forest. As singularizing narratives develop, I will break down some elements of this distinction. Doing so allows people to value things because others value them. They can also value things because they are valuable to other living things. To better understand the value that a forest finds in itself, it is worth observing some of the practices proposed by ecological forestry. First of all, ecological forestry demands certain practices that would seem wasteful to the commodity forester. Ecologists would have foresters leave a certain number of cut logs on the ground, leave tree crowns near the place where the tree was cut down, and leave many grown trees in place to maintain age diversity within the forest. They would have foresters plant new trees from multiple species to maintain diversity, as well as nontree plants for the forest floor. They would have foresters avoid intensive site preparation that alters the soil, but makes it much easier to plant a new crop of trees.³⁹ These practices would promote the interests of the stand as a forest. The theme proves the singularity observation: traced from their origins and represented as unique entities, trees are useful to forests, not just to people.

What do trees do in forests? They are the constitutive element of forests, but this does not express the relationships between living things that they facilitate. Importantly, trees regulate the flow of resources through a forest ecosystem. They hold soil in place, control the flow of water, provide shelter from weather, and support diverse and complex interactions with other organisms. Without the cover of a canopy of trees, the ecology of a forest floor is a completely different environment and many native species cannot thrive. This is why clear-cuts and crown fires⁴⁰ are profoundly significant ecological events. Chapter 6 discusses a common aesthetic preference for well-used objects, for instance, otters fishing in clean streams and children playing with toys (see Chapter 6, Ethical Theory and Valuing Objects). These are simplified versions of an understanding that values system complexity for its dynamic and diverse order. Complex biodiversity is a foundational priority in singularity value because ecosystems rely upon symbiosis for living things to thrive:

In North American forestry, where conifers are the major commercial species, noncrop vegetation is virtually always broadleaved trees, forbs, shrubs, and grasses. A variety of studies have either conclusively demonstrated or strongly suggested that these plants perform numerous important ecological functions, including providing unique food (e.g., nuts, nectar), enhancing nutrient availability, replenishing nitrogen capital through biological fixation, stabilizing soil nutrients and biology following disturbances, and increasing resistance of conifers to herbivorous insects, pathogens, and fire. The complexity of interactions among plant species is only beginning to be understood but goes far beyond simple competition. For example, it is now well established that different plant species within at least some communities – including broadleaved trees and conifers – participate in a network of shared resources mediated by mycorrhizal fungi.⁴¹

Mutually advantageous interactions make biological health a property of biological systems rather than individual organisms, and demonstrate the importance of biodiversity. As we will see, the promotion of diversity presents certain normative challenges, but all things considered, biodiversity will remain one of the most compelling ecological imperatives, and one that is most sorely threatened by the intensive industrialization of commodity forestry. The loss of uniqueness and complexity is not just destructive to individual organisms, but to the health of the larger pattern.

What value is to be placed on the viability of these ecosystems? At what price can their utter destruction become conscionable? Looking at trees in the abstract makes such a question difficult to answer. Squirrels do not pay rent for their treetop homes. The utilitarian's summation of forest use-value requires a number of difficult-to-estimate parameters of ecological services that the forest provides to persons. There are those who seek to price such things as an illustration of natural capital.⁴² I do not object to the effort, but singularity value provides an alternative and less circuitous approach. Observing the harm and benefit of a given singular object viewed across its history, one can ask in a straightforward manner whether the totality of that use makes the world better, more beautiful, and more complex. Trees are valuable on a planetary scale and to their local ecosystems. Given their value, any use to which they are put should provide more value than the trees were providing in their original location, and the price paid must cover the cost of repairing the trees' habitat.

In ecological terms, it would be preferable that these trees be taken in clusters at sporadic intervals from a large land area so that the forest could persist in its genetic and ecological diversity. Cutting trees need not be equated with deforestation, but this alternative is more costly. The industrial approach to forestry is a by-product of basic economic forces that provide few incentives for stewarding the long-term viability of the ecosystem. It is expensive to build mills for processing and roads for extraction, and the expense is more easily recovered through intensive use. At a given price, wood production is only justified for a given size of operation with a given local intensity.

Trees in Products

Though it may not be possible to determine the precise economic value of the ecological niche of an individual tree, it is possible to compare some aspects of the tree's contribution in this setting to the contribution that it makes elsewhere, after being cut down and processed. Trees are used in many different ways, some more wasteful than others. In 2009, the US Postal Service delivered 85.2 billion advertisements,⁴³ many of which would not have been considered useful by either the recipient or the sender, and almost all of which were printed on wood fiber-based paper. Though email, e-books, and digital filing systems have reduced some wasteful uses of trees, humans continue to increase the resources that they use. Wood fiber is wasted by tearing down structurally sound houses to build more spacious homes, by discarding building materials, and by making furniture that will not last. These practices encourage shortsighted consumption that increases waste. Because trees are valuable as trees, it would be preferable if we used as few of them as possible and if we used them in durable ways. Using a tree in a house or a book is acceptable, provided that the use value exceeds the lost use value of those materials in their native setting.

But the story of waste begins earlier, depending not only on the way that products are finally used, but on their conditions of extraction. In 1897, John Muir described a hierarchy of wastefulness in forestry. At the bottom of the heap he places the shake-maker:

Of all the destroyers that infest the woods, the shake-maker seems the happiest. Twenty or thirty years ago, shakes, a kind of long boardlike shingles split with a mallet and a frow, were in great demand for covering

barns and sheds, and many are used still in preference to common shingles, especially those made from the sugar-pine, which do not warp or crack in the hottest sunshine . . .

Only the lower, perfectly clear, free-splitting portions of the giant pines are used, – perhaps ten to twenty feet from a tree two hundred and fifty in height; all the rest is left a mass of ruins, to rot or to feed the forest fires, while thousands are hacked deeply and rejected in proving the grain . . . It is not generally known that, notwithstanding the immense quantities of timber cut every year for foreign and home markets and mines, from five to ten times as much is destroyed as is used.⁴⁴

Thus, our approximation of wastefulness must include both the unimportant uses to which things are put and the inefficient means by which they are extracted. Either of these factors can undermine the use value of an object from a singularity perspective.

Forestry is much improved since Muir's time. There are fewer trees to waste, and Muir's call for regulation was answered.⁴⁵ But unfortunately, the dominant norm of forestry continues to treat trees as a commodity. The economic organization of the industry confuses the downstream consumers who would prefer to act as good forest stewards. This presents a serious challenge for the singularization of objects from the consumer perspective, one to which we will return later in this text. If consumers cannot assess the quality of the products that they buy, they cannot make conscientious decisions about what to buy. Deprived of their capacity to care by dysfunctional sustainable-labeling initiatives, consumers may even be discouraged from the very possibility of living responsibly.

In wood fiber products, a controversy arose from the application of green labels by an organization that appears more concerned with the health of the forestry industry than the health of the forests.⁴⁶ Labeling initiatives have come to play an important role in the global governance of forest stewardship.⁴⁷ Like many supply chains, wood products are covered by numerous regulatory regimes, none of which can be said to guarantee sustainable forestry practices. Consumers and environmental groups rely upon environmental responsibility labeling initiatives to provide market incentives for organizations that choose to go beyond what the law requires to protect, and sustain, local ecologies.

The Sustainable Forestry Initiative (SFI) was founded in 1994 as an outgrowth of an industry group called the American Forest and Paper Association. Though it has since become a separate nonprofit

organization, its board is comprised almost entirely of timber and paper industry insiders who, according to environmental groups, are creating a brand rather than a credible certification procedure.⁴⁸ “The SFI’s standards and procedures have been developed and approved by industry for industry.”⁴⁹ In November 2010, ForestEthics released a report on the lackluster performance of SFI that documented a long list of environmental hardships suffered by forests under SFI’s care.⁵⁰ Among the more troubling issues are that SFI-certified auditors claim to have inspected more than 46,000 square miles of forests in five days; that SFI has done little or nothing to address problems with excessive chemical use, landslides, erosion, and species endangerment; and that the labeling system is designed to be confusing so that customers will see the word “sustainable” on their most common label, which is only meant to certify the percentage of the product that is made from recycled content. In September 2011, ForestEthics partnered with a coalition of twenty environmental organizations like the National Resource Defense Council and the Sierra Club to pressure SFI to “stop the greenwash.” However, with an annual marketing budget of more than three million dollars,⁵¹ SFI’s labeling continues to influence consumers. And, despite more than ten years of public opposition since SFI was first accused of duplicity in the late 1990s,⁵² there is no resolution in sight.

The SFI dilemma poses a challenging issue for singular values and the promulgation of a conscientious consumer ethic. Sustainable forestry requires careful stewardship of forest ecology, suggesting that a high value be placed upon forest products, and a price premium is likely the best way to guarantee this performance and to cover its costs. However, with a little environmental deception, firms can claim this price premium without incurring the costs of responsible production.

What is to be done about willful environmental deception? Some suggest that environmental deceivers should be driven out of business. As Ray Anderson, the environmentalist founder of a large carpet manufacturer, put it, “We must be genuine. Our actions must speak louder than our words. Greenwash (pseudo-green) is, and should be, business suicide. Our customers should and will see right through it.”⁵³

Anderson mixes normative and empirical claims by arguing that greenwashing is business suicide and that it ought to be suicide. Yet the enduring fight with the SFI would seem to indicate that greenwashing does not result in business failure, at least not immediately.

Conscientious consumption often works by denying the collective action problems of implementation. The conscientious consumer imagines, in a way that I will later trace back to Kant, that if she could get everyone to behave as she does, profound change is possible. If the lack of stewardship in the wood supply chain were to motivate the average consumer to avoid the consumption of wood, producers would be forced to change their practices. This is the level at which some industrial changes must occur when incremental change fails to progress. Reduced consumption does not target any especially harmful organization or benefit any especially beneficial ones, but it avoids the uncertainty of the ecological dilemma that wood fiber products pose. Singular values suggest that consumers should not buy wood products that are tainted by ecologically destructive forestry, but as long as commodity forestry can benefit parasitically from positive moral values by redirecting them toward pseudo-ecological products, conscientious consumption cannot achieve its objectives.

The contest is not only being carried out in board rooms and sales floors, but across a global ecological landscape. Forest ecosystems are constructed for economic use. Under the maximizing logic of commodity forestry, massive tracts of land are planted using simplified landscapes that deprive the land of its potential for biological diversity and complexity. These simplifying landscapes make the land less useful to numerous other organisms, including people, and more susceptible to a variety of threats and pathogens. Those who wish to maintain diverse forest ecologies are likely to care about the origins of a given wood product. For the commodity foresters who view trees like so many blades of grass, such an aesthetic is utterly foreign.

In forestry, there are issues at every stage of the process, from the cultivation of trees in nurseries through planting, harvesting, processing, using, recycling, and disposal. Forest scientists are still learning and experimenting to better understand the ecological and economic implications of their subject, but the implication of the singularity logic for those of us who are merely consumers of wood products is clear: if the value of a given use case does not exceed the value of the tree from which that wood originated, the tree should stay rooted in the ground. Given the nearly universal adoption of unsustainable forestry practices, diffused globally in the eighteenth and nineteenth centuries, the state of existing landscapes is not a reliable guide for how land should be used. Caring for trees in their diverse potential sets a higher standard.

Though only a few old-growth forests remain to demonstrate the full ecological potential of native plants, we still know the difference between forestry techniques that enrich the complexity of a forest and practices that only aim to simplify. As such, forests provide a key example in the analysis of objects as singularities. I have focused to a great extent on their cultivation because I will next turn to two other products at different stages of production. Then I will return to forests again at the end of this chapter to propose a more ecological approach to economics.

Tainted Toys

Forests and their trees have a prominent place in many ecological imaginations, but now I will turn to objects whose history is less conspicuous in the imaginations that they inspire. Usually, toys are representative of characters and their meaning is shaped by the sentimentality of the attachments that children form with them, but on occasion serious defects bring attention to their origins. Several toy recalls in the late 2000s brought the origins of such objects to prominence. Singularization may be justified by a concern for an originating ecology or by the appropriateness of an object for its intended use. Toy safety scandals raised concerns about product safety and the care shown by manufacturers for users.

During 2007, there were forty-two significant toy recalls due to lead contamination.⁵⁴ These recalls contributed to widespread public concern about safety and product quality in globally manufactured goods. Mattel, a large toy company, had three waves of recalls involving more than 20 million toys.⁵⁵ Lead was the initial focus of the recalls. The lead was accidentally introduced by the manufacturer that Mattel hired in China to produce the toys. Later recalls resulted from magnets that detached too easily and were potentially harmful if digested. This design failure directed blame at Mattel as well as its supply chain.⁵⁶

Pirson and Malhotra⁵⁷ argue that Mattel's multiple conflicting public actions caused mistrust both upstream with Chinese suppliers and downstream with American consumers. The notion of toys as singularities does not direct responsibility to any one party or individual as could a contract or finding of negligence. Instead, singularities bring together communities with shared interests in common resources. The Chinese suppliers, the American designers, and the American

purchasers are brought together by one specific toy that moves from one factory to one household and puts one child at risk. Within this community, responsibility would usually spread out so that both Mattel and its suppliers have obligations. But these specific things do not justify Mattel pointing fingers across the Pacific. As stewards of toys with responsibilities to their eventual consumers, both designers and manufacturers should think critically about the safety of the product.

The toy recalls had a profound emotional impact as one of several product safety issues that arose simultaneously from internationally sourced products. As the *New York Times* later reported,⁵⁸ Mattel blamed the contaminated toys on Lee Der Industrial, a toy manufacturer based in Foshan, China. Zhang Shuhong, the manager of that firm, committed suicide in the wake of his firm's vilification. Lead paint arrived at Lee Der from a supplier that sold several contaminated pigments. Looking downstream, the pigment supplier and paint supplier should both have known that the paint was being delivered to a toy factory. Since the dangers of lead materials are widely understood and manageable, the careful stewardship of lead should go all the way back to the original lead mining operation, but there was a failure at some point along the chain of custody.

In this case, dangerous materials were accidentally applied to products that would be used by the most delicate consumers. We should not imagine that the task of controlling this risk is easy: dynamic sourcing relationships are notoriously difficult to control and the further they spread, the more difficult it is to keep track of the moving parts. However, until suppliers develop a downstream sense of responsibility and accountability, their reputations remain at risk, as do the parties with whom they do business. Product streams flow together through assembly, and downstream consumers tend to develop extremely general understandings of the etiology of supply chain irresponsibility, particularly cross-culturally.

When the Peanut Corporation of America caused nine food poisoning deaths and 116 hospitalizations by violating health and safety regulations,⁵⁹ American consumers were angry at the company, at regulators, and at companies that used Peanut Corporation as a supplier.⁶⁰ Their acrimony was wholly consistent with an object theory of responsibility. However, when Mattel imported toys from China that were painted with lead, the blame was less focused.

American consumers did not trace the responsibility back to a pigment manufacturer in China. Instead, they generalized to all manufacturing in China and all China-sourced products. A Reuters poll reported that four out of five people were uncomfortable with the safety of products sourced from China after a few unrelated product safety scandals.⁶¹ As a category of product origins, China is geographically, organizationally, and interpersonally far more diverse than the actual perpetrators. Nevertheless, this diversity escaped consumers.

By developing responsible production norms and sanctions, governments and local business communities can reduce the likelihood of untargeted sanctioning behavior that affects an entire industry or region. However, in response to some incidents, like the lead contamination of toys in China, regulators can be too targeted in their punishment. In the case of Lee Der, the result was professionally and personally devastating. The Chinese government revoked Lee Der's export license and the firm's prosperity instantly collapsed. After reinvesting nearly all of his personal wealth in Lee Der,⁶² Mr. Zhang was forced to make a company-wide announcement encouraging everyone to seek other employment; he later killed himself in the factory where he lived and worked.

China singled out Lee Der as a scapegoat for the breach of trust perpetrated within the larger supply chain. Insofar as responsibility is shared throughout a supply chain, it is an injustice to focus blame so narrowly. Responsibility is shared by those who delivered lead paint to a toy manufacturer, by those who failed to check the contents of the paint used at Lee Der, and by Mattel's failure to monitor the safety of its products by inspection. This sense of shared responsibility demands vigilance from supply chain actors at all stages of production and distribution.

Some concerns for ecological value apply to toys as well. For instance, if toy manufacturers and consumers think of toys as singularities, they should concern themselves with the sources of petroleum by-products used in plastic. Any environmental or safety issues within these production processes are inherited by the toys. What distinguishes the toy case is a specific form of upstream and downstream vigilance. Safety issues are actually easier to address through a comprehensive supply chain accountability structure than problems like workers' rights. Unsafe toys can be tested for safety, whereas toys produced by exploited labor do not inherit any physical property

during production. Similarly, paper made from sustainably harvested wood fiber is much like paper made from clear-cut forests.

As a technical matter, the origins of toys are much more easily traced than the origins of wood fiber products. Many toys are stamped with lot numbers, and almost all can be tracked back to a specific factory, if not a specific day of production. A ream of paper also has an origin story that is semitraceable, but the pulp from which it is made may include both recycled and new content. Wood fiber can be broken down into source percentages, as could the petroleum origins of toys. This is as close to singularities as these products can get.

Toy Life Cycles

Beyond safety and ecological issues that accumulate in production, the impact of toys also results from design, use, and disposal. Working within the ISO 14044 standard for Life Cycle Analysis (LCA), the dominant methodological standard guiding this form of accounting, Muñoz and colleagues attempted to measure the impact of “Winnie the Pooh Stories and Songs,” an electronically voiced teddy bear. They found that manufacturing the toy accounted for 28–34 percent of the toy’s total impact and that the batteries necessary for the toy’s use accounted for 50–64 percent.⁶³ Though these impact factors vary by product, I will consider some additional details about this study of one toy to better understand the potential and limits of LCA approaches, including their boundaries and role in design improvement.

The Muñoz study focused on five impact categories: “abiotic depletion potential, acidification potential, global warming potential, eutrophication potential, and photochemical oxidants formation potential.”⁶⁴ Lacking available data and modeling techniques, it was impossible to assess other potentially important factors like human and eco-toxicity potential and soil use impacts. These are major considerations in the ecological theory of value described below, but they are not easily measured in this assessment framework.

The following year’s redesign of a similar toy managed to reduce some of its impact based upon the recommendations in the Muñoz analysis. The new toy used less plastic and more recycled content, it was more energy efficient, and it encouraged purchasers to use rechargeable batteries to reduce disposable battery use. This is the kind of product innovation that is so far possible on the ecological side of mainstream

product design. There is no room here to suggest that we make and consume fewer such objects, but there is room for making the products less harmful in their direct and indirect consequences.

Practical pedagogies of resource conservation teach us to reduce, reuse, and recycle. This “waste hierarchy” prioritizes methods of conservation, with reduction having the greatest impact and recycling having the least. Each method involves certain challenges. In order to reduce, one must consume less. In order to reuse, one must tolerate degraded performance or initially invest in a more durable alternative. In order to recycle, an entire infrastructure must be put in place. Manufacturers must label their materials so that recyclers can identify them. Assembled products must be easy to disassemble. Materials must be collected and sorted from waste streams, and delivered to specialized recyclers. These practices are only feasible in countries with a reliable waste removal infrastructure. Moreover, recycling’s role in conservation offers mixed results. Recyclers can only make use of a subset of all the materials delivered to them. For the subset of materials that can be recycled, significant water and energy resources are necessary to process them into a manufacturing-ready form. The remaining benefits of recycling are that in specific cases, recycled materials require fewer resources to process relative to virgin materials, and that recycling keeps these materials out of landfills.

This hierarchy has been in place for decades. It is sometimes expanded to clarify the options for end-of-life management. For example, the US Environmental Protection Agency adds compost, energy recovery, and landfill below the reduce, reuse, and recycle options.⁶⁵ The hierarchy cannot be strictly interpreted across all contexts. Several articles have criticized the simplifying linearity that the hierarchy implies, for example, by arguing that landfill and incineration may be preferable in regions with sparse populations.⁶⁶ More generally, it has been argued that the mixed environmental and economic consequences of different conservation options need to be better integrated into policy decisions, including an approach that sets aside recycling targets for variable price-based policies.⁶⁷

The current waste management regime is not solving the waste problem. From 1975 to 2010, per-capita municipal solid waste (MSW) in the United States increased by approximately 36 percent. In 1975, the United States generated 127.8 million tons of MSW, recycling 9.3 million tons of that total. In 2010, the United States

generated 249.9 million tons of MSW, recycling 85.1 million tons of that total. Despite a nine-fold increase in recycled waste volumes, the quantity of nonrecycled waste still increased by 39 percent from the mid-1970s.⁶⁸

Unfortunately, the problem is not as simple as an improper priority system for the way that waste is handled. The larger problem is an economy that completely disconnects waste generation from waste responsibility. Fee-for-service infrastructures aim to address this disconnect in the aggregate, forcing households and businesses to pay for the amount that they discard. Yet waste is so easily discarded in small quantities at unmonitored locations, and so expensive to collect from these locations, that fee-for-service disposal becomes difficult to police. As a result, we neglect the opportunities to reduce and reuse in favor of recycling, which requires only modest innovation on the part of producers.

One of the biggest challenges for recyclers is e-waste. Electronic components are large, expensive to disassemble, and often full of toxic materials. The costs and regulatory hurdles of recycling them correctly have caused many recyclers to export trash to places where they will have serious consequences. To document this problem, a group of researchers hid tracking devices in e-waste. Their strategy is a perfect example of the opportunities for singularization presented by new technologies. The researchers tracked e-waste from US recycling centers to Mexico, Taiwan, China, Pakistan, Thailand, Dominican Republic, Canada, and Kenya.⁶⁹ Visiting these sites, they found dangerous conditions where workers were exposed to potentially harmful doses of known carcinogens. The workers at these sites were not trained to recognize which parts were dangerous, and they were not provided with safety equipment to protect themselves.

There are a few exceptions. Many grocery stores offer discounts to customers who bring their own bags, and some businesses invest in reusable shipping containers to reduce long-term capital costs. Nevertheless, many products would not exist if durable alternatives were a normative standard.

The LCA approach may be viewed as illustrative of the harm that a singularized product will cause, but the way that Life Cycle Analyses generalize, model, and establish confidence intervals fits more plausibly within a commodity framework. LCAs are based upon impact assessment models that are averaged over ordinary manufacturing, use, and disposal

behaviors. Some of these toys may never be removed from their boxes; these will do the least harm through their battery consumption. The generalizing perspective of averaging outcomes and inputs is appropriate for a firm that will design, produce, and distribute many toys without much control over how they are treated.

Though Disney has certainly singularized its Winnie the Pooh character and his anthropomorphic friends with unique and human-like characteristics, none of this uniqueness is bestowed through the impact assessment procedure. The toys wait to be singularized until they reach a child's hands, where they are likely to be treated with some focused care. Young children develop powerful object attachments and find it more difficult to give up objects than other pro-social behaviors.⁷⁰ Nevertheless, children grow out of toys, and then they are desingularized and discarded. In the end, as in the beginning, the toy is blended into a commodity heap, its origins forgotten.

This chapter illustrates the practical understanding and limits of object singularization. In the case of toys, a safety scandal promoted focused awareness on object origins. This awareness dissipated as the scandal abated. The waste properties of toys are concerns for manufacturers, academics, and some conscientious consumers, but these examples help us to see that our interest in objects as singularities may often be ephemeral.

Applying the Golden Rule to Gold

The object perspective has almost limitless applications beyond toys and trees. The method is applicable to all products, resources, and equipment that are of sufficient worth or destructive power to warrant stewardship. If the premise is accepted that responsibilities flow with material goods, then many people should develop expansive supply chain knowledge throughout their careers. Relative to the understanding of career insiders, any account of this type is far too general. In forestry, for instance, an employee should be concerned with trees in general, and with a given set of trees, in a given place, destined for a given use. That said, the basic features of the trees and toys as singularities give us a point of departure. Unsustainable forestry is illustrative of the limits of use and the consequences of use-value being defined too narrowly. Unsafe and ecologically wasteful toys are illustrative of how usefulness is valued and how individual careers and

well-being can become intertwined with supply chain stewardship. Most singular values begin with an analysis of the undisturbed value of an object and continue through the consequences of whatever supply chain may be desirable, including final disposal. Gold is interesting because it has no final disposal. Gold is made into new things and used in the transfer of value, but it is almost never discarded.

To understand the consequences of a thing, we must first look to the natural history of its component parts. Gold, for example, is buried in deposits, sometimes in streams and shallow pools, sometimes deep under the earth, sometimes in large pieces, and sometimes in veins that need to be concentrated and purified. The location and concentration of gold within a landscape determines the ecological intensity of a mining operation. Pieces of gold lodged in surface sediments that can be collected in pans require no alteration or destruction of the natural environment, but little gold is collected this way. Instead, most gold is collected from ore, often leaving behind acid-filled tailings and a poisoned water table. The gold extraction process is as interesting and as controversial as the extraction of trees. As with forestry, there are efforts to promote a responsible standard to protect the interests of small-scale gold producers and their ecologies,⁷¹ but most gold purchasers are unaware of this standard and a minuscule percentage of the world's gold extraction is governed by it.

Gold's use is distinguished from other objects by the near certainty that it will be recycled and by its use as a commodity investment. Some gold becomes jewelry, but gold is also held as a value basis for currency and investment, a durable and perfectly fungible commodity. Gold has a long history in this role that complicates the linearity of the singular values described above. In this section, I set aside the originating issues of cyanidation, mercury, and ground water pollution as roughly analogous to the ecological considerations already described for trees. If the origins of wood fiber are important, so are the origins of gold. If the use and waste of wood products must be measured against the value of the trees undisturbed, the same holds for gold as well. Here, I focus on gold that is used as a medium of exchange.

Suppose that an ounce of gold had been procured in a responsible manner, without unnecessary environmental destruction and providing the requisite social benefit to those who labored in its extraction and refinement. Our description of singular value has focused upstream on the origins of objects, but now the purveyor of gold must look

downstream at the uses of gold and at the sources of the currency for which the gold is exchanged.

Looking upstream, one would not purchase something acquired by theft. Looking downstream, one would not wish for gold to be used to hire a contract killer, to bribe a public official, or to further any other irresponsible end. This is a speculative realm, and one that would seem to be quite beyond the control of a seller. Nonetheless, the same spirit that would show concern for the origin of a thing must also consider its eventual use or misuse.

If an unscrupulous individual wished to use gold to make illicit payments untraceable, then the purveyor of the gold should wish to not to sell. Indeed, if this is how most gold is being used, then a person would have reason to avoid participating in the trade altogether. This is the spirit of “know your customer” procedures within banking, policies that seek to determine which customers are worthy of the money that they wield before helping them to wield it. We will soon arrive at the conclusion that gold is hardly ever singularized in this way, but first, we should understand the conceptual category of singularization that differs from everyday practices.

Consider a hypothetical scenario. Suppose that a gold buyer believes that a seller came by the gold in an unscrupulous manner. In such a case, the singularity logic implies that this buyer should prefer not to purchase the morally tainted gold. This is the fringe of the singular value paradigm, where the origins of money matter, commodities lose value when their origins are irresponsible. In her studies of the economic sociology of money, Viviana Zelizer observes that money is not nearly as fungible as economic theory would suggest. Often, it is earmarked for specific purposes according to the way in which it was acquired.⁷² Of course, there are practical limitations to the number of transactions that can occur before money’s moral valence attenuates, but the point stands as a conceptual idea with a significant normative application to durable assets like gold.

All of this is just a preview to a way of thinking about things as a gathering point for normative claims. Once we organize morality through objects, we can calculate harm and beneficence, justice, fairness, and numerous other moral considerations at an object level. The details of these moral calculations are important, as is the question of whether the right kind of calculation and comparison is even possible. As a primer, I said of trees that whatever value wood fiber products

create must exceed the harm done in their extraction and that this value must be redistributed to remediate their extraction if the whole singularity value of the object, at every stage of its production, use, and disposal, is to be positive. Like trees, gold must also be put to a use that exceeds the ecological costs of its production. Moreover, the economic origins of a given piece of gold are as important as the ecological origins.

If it seems far-fetched that we should think about gold in terms of its origins, consider the trial of Reza Zarrab, a Turkish national who is accused of using gold and fictitious food shipments to launder sanctioned Iranian wealth into other currencies. Zarrab is implicated in a leaked Turkish police report that describes the bribery of public officials and falsification of documents, all aimed at delivering liquidity to cash-starved Iranians who would otherwise be unable to fund their imports. Of course, that was the whole point of sanctions, so the gold trade effectively set out to undermine the sanctions regime. Indeed, gold is an important part of the story. The growth of the gold trade between Turkey and Iran was massively inflated under the sanctions regime. In 2011, Turkey sold one metric ton of gold to Iran, whereas in 2012, this figure increased to 125.8 metric tons to Iran and another 85 metric tons to the United Arab Emirates.⁷³ In the process, the people moving this gold became extremely powerful by paying bribes to the highest levels of the Turkish government.

If we follow the singularity logic as it pertains to how objects create causal links in human behavior, then gold and other tradable objects gain significance by mediating behavior. A purchaser gives gold value through exchange. If the seller acquired the gold unscrupulously and caused harm in the process, the purchaser motivates that behavior by paying for it. Assuming that the sanctions regime was legitimate and morally defensible, the trade of gold which set out to subvert that regime cannot be, and the specific gold involved in that trade becomes morally suspect.

The sanctions case is more complicated than some other examples because the victims are diffused, if there are any victims. But regardless of the specificity of the harm, gold becomes tainted and its ownership suspect when its trade causes harm. This materialism promotes a radically different conception of organizational responsibility and economic risk. For consistency's sake, if the origins of trees and toys matter, then so should the origins of gold and dollars. But gold proves

much more persistent in the economy, and unfortunately, many of gold's uses and extractive practices have been harmful. This includes a global history of slavery and brutality in mining practices dating from the colonial era. It includes gold expropriated from Jewish people by the Nazis in the 1930s and 40s. It also includes the things that this gold bought for corrupt regimes to fund their wars. Gold is still a medium of exchange between nations, and these exchanges merely add to the ingots' storied histories. The normative implication of gold as a singularity encourages a seller to ensure the responsibility of gold's origins and forces a buyer to do the same. And yet, in practice, gold's value is checked only by its purity, with acid scratch tests for instance.

Singular objects still have material properties aside from their ascribed normative characteristics. Without contradiction, a gold coin can be entirely tainted by its Nazi history and nearly pure by its chemical composition. The point of singularizing objects is not to imagine away the mechanical, chemical, and biological attributes of things, but to append to this list a moral history that pertains to specific entities. As I will show in the next section, ascribed moral characteristics will help us to organize ourselves, and our companies, around nonmaterial characteristics so that we can better manage consequences distributed across long supply chains.

Stewardship Economics

What can we infer from the three examples? Trees, toys, and gold provide opportunities for object stewardship that involve varying degrees of complexity and a range of information processing problems. The normative orientation that they share, however, is relatively coherent. The moralization of objects through singularization asserts responsibilities for supply chain participants. Later, I will consider the elements of this responsibility including stewardship, coordination, and foresight.

The challenges presented by singularization are both empirical and normative. As we begin to develop object singularization as an alternative framework for theorizing and optimizing human behavior, we will need to develop an economics of value that is compatible with environmental and social responsibility and attached to physical objects. It is always possible to value these notions in the terms of orthodox economics, for example, by increasing the price of sustainably

forested wood products and decreasing the price of unsustainably forested products. But where do these price increases originate? What motivates the adjustment to new price equilibria, and what keeps suppliers from exploiting this price disparity by charging a sustainable price for unsustainable goods?

One common account looks beyond the market to find the inspiration for sustainable prices (see Chapter 4, Pricing Climate Change Agents). Some eco-optimists believe that the market already contains all of the motives that it needs to guide responsible production. These optimists belong to three main camps. Some believe that when social and ecological hardship become sufficiently certain, industries will be regulated and the market will adjust prices.⁷⁴ Others believe in the happy coincidence that the amount of available resources is less than, or equal to, the Earth's capacity to adjust to the complete use of these resources. They are incorrect. Already, it is certain that if our species was to weaponize and deploy the available stock of fissile materials, we could do catastrophic damage not only to civilizations, but to the Earth's capacity to sustain its diverse ecosystems. Some people have yet to realize that the overuse of fossil fuels may produce a commensurably catastrophic impact without any actions that seem catastrophic in scope. They believe that materials like oil will reach peak production before the damage caused by their use is irreversible. A third camp of eco-optimists believe in mankind's capacity to find new alternatives in near-catastrophic conditions. For them, it is not regulation or scarcity that will cause the adjustment, but a change in purposes reflective of the exigencies of new circumstances.⁷⁵

I will return to these market-based accounts later in the text, critically in Chapter 3 and Chapter 4, and more constructively in Chapter 8. While ecological concerns provide key examples in this text, this book does little to evaluate the scientific case for anthropogenic climate change. Instead, it takes up climate change as one of a range of issues that can be addressed in interesting ways by focusing on objects and singularizing them. Here, I do not adopt a firm position on what social and ecological risks are most pressing, though I do draw from some examples that have received considerable scrutiny by others. My purpose in doing so is to point to the need for a system of incentives that recognizes risks and immediately adjusts prices to them. This system is market-based, but it involves a singularized sense of responsibility that the market currently lacks.

My argument is both descriptive and prescriptive. I describe a set of interests that need to be guided by some logic while also working from a prescriptive standard of conduct to guide an institutional architecture. The approach involves a complicated interaction between normative and empirical reference points. In order to describe the complex relationship between description and prescription, it is helpful to return to the example of forests.

Forestry Economics

Forestry, like other economic activities, suffers from governance failures. Supply chains are opaque, forests are large, and accounting for the actual forestry practices that have been used within a region can be costly. The ideal approach to wood production would take a sampling of trees in clusters, including trees of different sizes from across a wide area of a forest, in a way that mimics the natural forest disturbances like fires and wind damage. However, efforts to use these “selection cutting” techniques have not been successful. As Seymour and Hunter explain:

Given the popularity of selection cutting among the public and many environmentalists, it is worthwhile to recount why this system became discredited within American forestry circles in about 1960, so that foresters do not reinvent a square wheel in well-meaning attempts to practice ecologically based forestry. Typical misapplication of multicohort silviculture are harvests that: (a) remove just large trees; and (b) reduce density uniformly throughout the stand to a level that regenerates a new cohort virtually everywhere instead of in discrete gaps. These practices usually result from financial pressures to cut too many large trees; few natural analogues for such a disturbance pattern exist . . . Often short-sighted management causes such ‘selective’ cuttings to be repeated more frequently than the natural disturbance intervals, each time discriminating heavily against the oldest or largest trees. The unfortunate result is typically a reduction in age, size, and species diversity, with cohort structures becoming more uniform over time and economically valuable species being lost.

In this case, the ideal forestry practice is not being maintained because short-term incentives are incompatible with long-term stewardship. A basic governance problem needs to be resolved before the best practices can be consistently maintained. Beyond the need for good

governance, we also need a better theory of value to express clearly why these resources are worth protecting.

Nineteenth-century foresters drew on the economic theory of their day to develop an industrial approach to tree harvesting. "Soil rent theory" treated land as a factor input that should be intensively focused on growing trees, the economic purpose to which it was dedicated.⁷⁶ Forests provided an ideal setting for economic analysis: tree growth rates were easily measured in homogenous single-species plantations. Given these rates, the discount rate, and the market price of wood, a profit-maximizing forester could determine how long to wait until a given parcel of land was cut and replanted.⁷⁷ Foresters performed economic theory by simplifying the forest and making it easier to inventory for accounting purposes. They planted trees in rows and maintained a count of the available timber and they cleared the forest of underbrush to make this accounting even easier. The maximizing logic would never have been tractable in complex ecological forests. Economic sociologists are interested in the ways in which economic actors perform theories.⁷⁸ Like self-fulfilling prophecies,⁷⁹ some theories take over the imaginations of the actors that they describe and become motivations and justifications rather than mere descriptions.

Though it is unclear whether the applied logic of commodity forestry originated in factory production models or in economic theory, the strategies utilized in most private forests continue to mimic an approach to economics that focuses on specialization and maximization by simplifying forests. In contrast, advocates of ecological forestry suggest that interactions between trees and other organisms are important to system stability. They criticize organic matter removal, site preparation, roading, and monocultural practices that attempt to control the natural environment to ensure forest productivity because many of these strategies are harmful to the forest's biological system.

Markets Versus Nature

Rather than reforming the natural environment in the image of economics, perhaps we should reform economics in the image of our natural environment. I am certainly not the first to suggest such a transformation,⁸⁰ but the object-centered approach presents an important opportunity for doing so. An object focus provides a specialized lens for understanding the maximizing logic of economics within

a framework of complex and pluralistic value. Economic orthodoxy imagines agents owning or renting resources which they deploy in order to maximize their own utilities, or at least to satisfy a set of preferences in choosing between the available options with which they are presented.

If we are to maximize something, perhaps we should maximize the use value of the objects with which we interact. It may not be possible to maximize pluralistic ends⁸¹ because incommensurable values result in multiple mutually exclusive aims, but if we start at an object's origin and try to avoid harm at every stage, this implies a hierarchy of considerations within the history of each object. The final result of an object-centered approach is a new economy of stewardship. By tracing resource flows, this singularized approach offers a quasi-organic constraint on economic activity.

There are many important differences between the human economy and a mechanical or biological system, but there are some similarities as well. Most complex systems are regulated by the flow of resources and economies share this characteristic. For instance, plants grow with available sunlight, engines spin according to the throttled flow of air, and microprocessors run at the pace of the electricity supplied to them. Up to a point, increased inputs also increase the performance of these systems, but beyond this threshold, key components begin to fail. If a plant is exposed to too much sun, if an engine is allowed to rev too fast, or if a microprocessor is overclocked beyond the capacity of its cooling system, the damage can be irreparable. Energy arrives in different forms as radiation, combustion, and electricity. And heat causes the failures, because heat is the form of energy that is lost and dissipated every time energy changes form. With an efficient process, heat can be managed or harnessed; otherwise, heat becomes the cause of failure.

The regulation of input flows is extremely important for the stability of complex systems. Plants evolve leaves with different shades of green according to the intensity of sun exposure in their environment, an engine's throttle is constrained to govern its speed, and a computer's power supply constrains the flow of electricity to the microprocessors to avoid overheating. The need for a regulated flow of resources within the human economy is no less dire, but the capacity to regulate this flow is much less developed. Though singularization is incomplete, it provides one avenue through which consumption, use, and disposal can be throttled.

To fully justify object singularization, I will need to show what it accomplishes that other approaches to business ethics do not accomplish. Chapter 8 shows how objects can help business ethics to be more consistent and comprehensive. The main contribution here is one of location and direction. The metaphor of system efficiency provides a helpful analogy. In ethics, we ought to be interested in the scope of the moral claims that an approach provides and the likelihood that the right responsibilities are directed towards and recognized by the right parties. If these responsibilities dissipate without being addressed, then they, like heat in mechanical systems, become a significant source of inefficiency that wastes or fails to realize moral potential. Singularization promises to locate responsibilities more reliably among the people who can act on them, and by doing so singularization promises to mitigate the risk that important social and ecological values will not be allocated to anyone.

A more complete account of singularization begins with understanding the schema through which singularization occurs, as Chapter 2 describes. In this, I will seek to naturalize the notion of object-specific care and to show the many ways that people come to singularize things.