



Conceptualizations of human values play a central role in the theory and practice of sustainability. How humans value the natural environment is central to how resources are distributed. A values typology, an arrangement of values by type, shows how humans express worth. Theories of sustainability must account for values differences, their measurement, and a system to weigh expressions of value over space and time.

However one defines sustainability, the concept, at its core, is about balancing human values in a world of limits. The Brundtland Commission, tasked with uniting countries in pursuing sustainable development, issued the Brundtland Report, commonly known as *Our Common Future*, in October 1987. The report stated that sustainability reflects an understanding that trade-offs are required for people within the present time and between people of the present and people of the future. Human well-being depends on, in part, natural, human, technological, and cultural resources. When these resources are limited, decisions must be made about their allocation across various uses. Values obviously matter in these allocations because different allocations serve different means, ends, and people. In the broadest sense, social processes and the outcomes these processes produce are sustainable if they continue to support what people consider important, which is determined by their values. “[M]ost debates over social policies, decisions, and actions are fundamentally disagreements over the relevance and priority of particular values” (Leiserowitz, Kates, and Parris 2006, 440).

Values matter in defining what is sustainable. They are the foundation upon which human behaviors are built. This case is made by the sociological researcher and president of the Social and Environmental Research Institute Paul Stern and colleagues when they say, “[N]orm-based actions flow from three factors: acceptance of particular personal values, beliefs that things important to those values are under threat, and beliefs that actions initiated by the individual can help alleviate the threat and restore the values” (Stern et al. 1999, 83).

If people are to use values to define and measure what it means to achieve sustainability, they must think about the different ways values can be characterized and, because not all humans hold the same values, the different ways of weighing values in social decision making.

The Nature of Human Values

Diverse frameworks of types are used to compare and contrast values. Discussions of values typically are anthropocentric, meaning they are based on how humans express what they consider worthwhile or valuable. For example, the social psychologist and cross-cultural researcher Shalom Schwartz suggests a formal definition: “A value is a (1) belief (2) pertaining to desirable end states or modes of conduct, that (3) transcends specific situations, (4) guides selection or evaluation of behavior, people, and events, and (5) is ordered by importance relative to other values to form a system of value priorities” (Schwartz 1994, 20). Such definitions, by design, do not explain the content of values.

In one way of thinking about content, values are desirable outcomes, outcomes that might be components of sustainability or might be equally important with sustainability. These outcomes are states of being or developments that humans find to be worthwhile inherently. Peace, freedom, progress, growth, or environmental quality are all concepts that express what some people see as human values. The US research scientist Anthony Leiserowitz and colleagues identify multiple attempts to characterize such values as outcomes that are both implicit and explicit in the sustainability literature (Leiserowitz, Kates, and Parris 2006).

An alternative way to think about values is in terms of motivation. Schwartz outlines what he terms “motivational” values (1994, 24). His model has four higher-order value types with a total of ten motivational types of values clustered under the higher-order values: (1) openness to change, (2) self-direction, (3) stimulation, (4) hedonism, (5) self-enhancement, (6) achievement, (7) power, (8) conservation, (9) security, (10) tradition, (11) conformity, (12) self-transcendence, (13) universalism, and (14) benevolence. Schwartz finds these value types to be consistently related in both theoretical and empirical ways. In Schwartz’s model, some combinations of these motivational values might be more consistent with sustainability than other combinations.

Several authors think of values in terms of their orientation, for whom or to what end the object of the value is supporting some particular behavior (Schultz et al. 2005, 458–459). There are five broad categories of orientation or object of value: (1) self, (2) other individuals (individual altruism), (3) other groups of humans (collective altruism), (4) all living things (individually or as a system), and (5) all aspects of the natural world, living or not (even larger systems thinking).

Finally, in the sustainability realm, there is a combined approach to the structure of what is valuable. In this sense, specific sustainability values relate to both

orientation and motivation. A typology of values in this sense is presented below. (See figure 1 on page 215.)

Sustainability Context for Values

Although many discussions cover the meanings of *sustainability* as a noun or *sustainable* as an adjective, most of them entail some element of underlying values. As a three-part concept, sustainable development addresses the interactions between economy, community, and the environment and speaks to cooperation and competition both within generations and between generations (UNDP 2011, 1). There is a growing

interest in sustainability science, an emerging discipline “that seeks to understand the fundamental character of interaction between nature and society”

(Kates et al. 2001). Central to the conduct of sustainability science is the importance of stakeholder engagement (i.e., the involvement of all of those who have an interest in the outcome of a policy dealing with sustainability), which makes explicit the ways in which values affect our understanding of what is sustainable (van Kerkhof and Lebel 2006). This new understanding of the central role of values in sustainability challenges traditional approaches of science.

“Many decisions are also affected by values, attitudes, and belief systems that are completely unrelated to or in direct conflict with

rationales based on scientific information” (Hart and Calhoun 2010, 260).

Inherent in most views of sustainability is the tension between how we allocate resources across people in the present (intragenerational equity) and across people of the present and future (intergenerational equity). Although people clearly need trade-offs here about what specific bequests they owe to the future, in a general sense, sustainability is a legacy construct, a framework for asking what condition the present should leave the state of the world for the future (Norton 2005). In economic terms, sustainability is



thus considered a problem of capital investment and depreciation. “Strong” sustainability assures we provide the future an undiminished stock of natural capital essential to human well-being. This approach values environmental quality as measured by the aspects of natural systems that provide ecosystem services to humans. The alternative, often favored by neoclassical economists (who favor determining prices, outputs, and income distributions in markets through supply and demand), is “weak” sustainability. In this view, economists view capital types—natural, artificial, and human—as largely interchangeable. Our obligation to the future in this view is to leave the future an aggregate stock of capital capable of serving human needs and wants (Solow 2000). Aggregate capital stock is the sum of human capabilities, physical and technological resources, and natural processes humans have available to them for the production of goods and services they find desirable.

The debate over weak versus strong sustainability often has focused on whether we can know what future generations will want or need. Advocates of strong sustainability presume to know something about what the future will value and, hence, presume that natural capital should be undiminished (Norton 2005, chap. 8). Advocates of weak sustainability are uncertain about future values and therefore conclude that our obligation to the future is to provide undiminished opportunities derived from all capital types. One type of capital can be substituted for another across a broad range of production opportunities.

This debate, then, revolves around the nature of values, how people think about what is valuable about the natural environment, and how they might measure those values. Whether natural capital is irreplaceable or not partly depends on how we think about environmental values.

Typology of Environmental Values

In its simplest version, measuring environmental values is seen as essentially a trade-off between anthropocentric (considering humans the most significant entity in the universe) and biocentric (considering all forms of life as having intrinsic value) views of nature. The New Ecological Paradigm (Dunlap 2008) creates a one-dimensional scale of environmental worldviews (which reflects underlying values) contrasting a pro-ecological ideal with a dominant social ideal. The German researchers Michael Wiseman and Franz X. Bogner create an alternative scale with two dimensions: (1) preservation concern and apathy and (2) utilization

concern and apathy (Wiseman and Bogner 2003). The US philosopher Bryan Norton explores this view of environmental values when he compares the approaches of economics with that of environmental ethics (2005, 160–161). Each field claims that its respective views on how to value nature (economism versus intrinsic value theory) can be comprehensive and monistic. That is to say, each theory claims to capture all the relevant value types (comprehensive) using a single conceptual framework (monistic). Norton assesses these claims and asserts, “If we reject this sharp dichotomy between instrumental and intrinsic values and the associated classification of natural objects as instruments or as moral beings, a pluralistic and integrative position emerges as a possibility: there are many ways in which humans value nature” (Norton 2005, 187). What is valued about the natural world is complex, and environmental values clearly are not always dichotomous. In other words, a person might value an aspect of the natural environment due to multiple motivations at the same time—values are not necessarily mutually exclusive.

To get at this complexity of environmental values types, figure 1 (on page 215) is a typology of values. This typology includes values that both motivate and reflect different orientations. To begin with, a fundamental distinction exists between anthropocentric and biocentric value (Dietz, Fitzgerald, and Shwom 2005, 341).

Biocentric Values

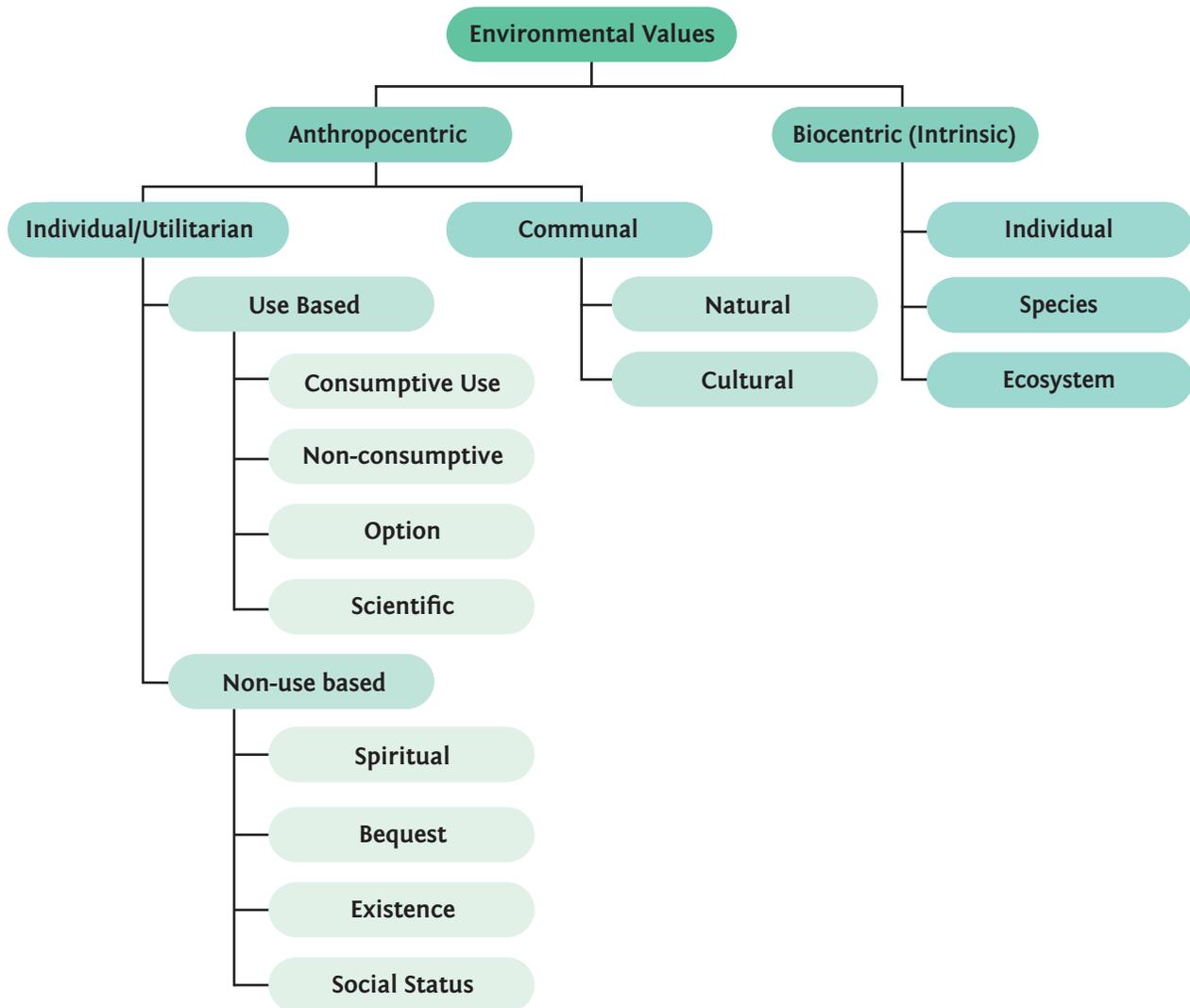
Biocentric value is sometimes called intrinsic value, the worth of an aspect of the natural world without reference to humans—the value of nature in and of itself. Some have challenged whether such a concept is an oxymoron in the sense that value inherently is a human construct that is meaningless when invoked without reference to humans (Norton 2005). That logical problem notwithstanding, many people believe that nature is valuable whether or not it provides humans with goods or services. For them, this sense is clearly different from *existence value*, a human-centered concept discussed below.

At least three potential orientations of biocentric or intrinsic value exist, all of which imply some sense of the extension of rights beyond humans (Stone 1974):

1. The value of the individual member of a species.
2. The value of the species as a whole.
3. The value of ecosystems, including nonbiotic elements of ecosystem function.

Many interpret the US ecologist and environmentalist Aldo Leopold’s (1949) concept of the land ethic as an

Figure 1. Typology of Values



The values labeled in this figure are broken down into a hierarchy of subcategories, but the weight of a category's value is subjective. Human values types are organized in a hierarchy to reflect relationships with each other, recognizing that humans may express several values simultaneously.

expression of this type of value. Leopold argued for expansion of the human community to include “the land,” what we might call nature today. In this view we should use the same ethical standards to define our relationship to aspects of the natural world that we use when we consider other humans. A tree is not merely an instrument for creating human well-being; it is an entity that has value in and of itself, without reference to its usefulness to humans.

Whether or not it is appropriate to talk about intrinsic value, intrinsic value clearly is not measurable in any meaningful sense because measurement would imply some human orientation. This type of value is

also called *biospheric altruism* (Dietz, Fitzgerald, and Shwom 2005).

Individual Anthropocentric Values

In contrast to intrinsic value, nature can also be worthwhile in reference to what its meaning is to humans; so we speak of anthropocentric or human-centered value. Nature provides for humans in multiple ways. Sometimes the worth of these is called *utilitarian value* because the environment contributes to human well-being (or utility, for economists). Four of these values are use-based in that

they derive from direct use, while four are values that generate utility without direct use.

Consumptive use value is the worth from nature generated by “consuming” the aspect of nature. So, the worth humans gain from killing a turtle to make turtle soup from the meat or a bowl from the turtle shell is termed consumptive use value. This value is often measured in economics in terms of market values, or willingness to pay. These market values are usually excludable (one that readily can be prevented from consumption) and “rival” (one person’s consumption means another cannot consume the same thing), resulting in a good that economists call a private good. The non-excludable and non-rival nature of non-consumptive use values typically are part of the explanation for public goods market failure. Scenic vistas are of this type; it is generally hard to exclude people from enjoying them, and one person’s viewing of them does not diminish their scenic character. Hence they are termed *public goods*, ones that no private firm will provide and therefore need to be provided by the government.

Of course, the turtle could also be useful to people in non-consumptive ways. For example, people benefit from watching turtles in the wild or maintaining turtles as pets. In such uses, the turtle would generate *non-consumptive use values*. These values are often non-rival. For example, one person’s enjoyment in watching a turtle normally does not diminish another person’s ability to also get value from watching the same turtle, although the viewing platform might get crowded. The non-excludable and non-rival nature of non-consumptive use values are part of the typical explanation for public goods market failure.

Even if a person does not eat or watch turtles now, at least two other uses of turtles might make him or her value them. First, someone who thinks that eating or watching turtles in the future would be worthwhile might value the option of preserving the turtle for that future use. Scientists who invoke the precautionary

principle in advocating the preservation of certain natural resources often are appealing to *option value*. (The precautionary principle posits that if we are uncertain of something, such as the ramifications of a new technology, it is best to err on the side of caution because it is often too late after the technology has been introduced.) Tropical forests may be important because they may hold a plant or animal species from which pharmaceuticals will be derived in the future. This example is related to the last use-based value, *scientific value*, which might be considered as a specific

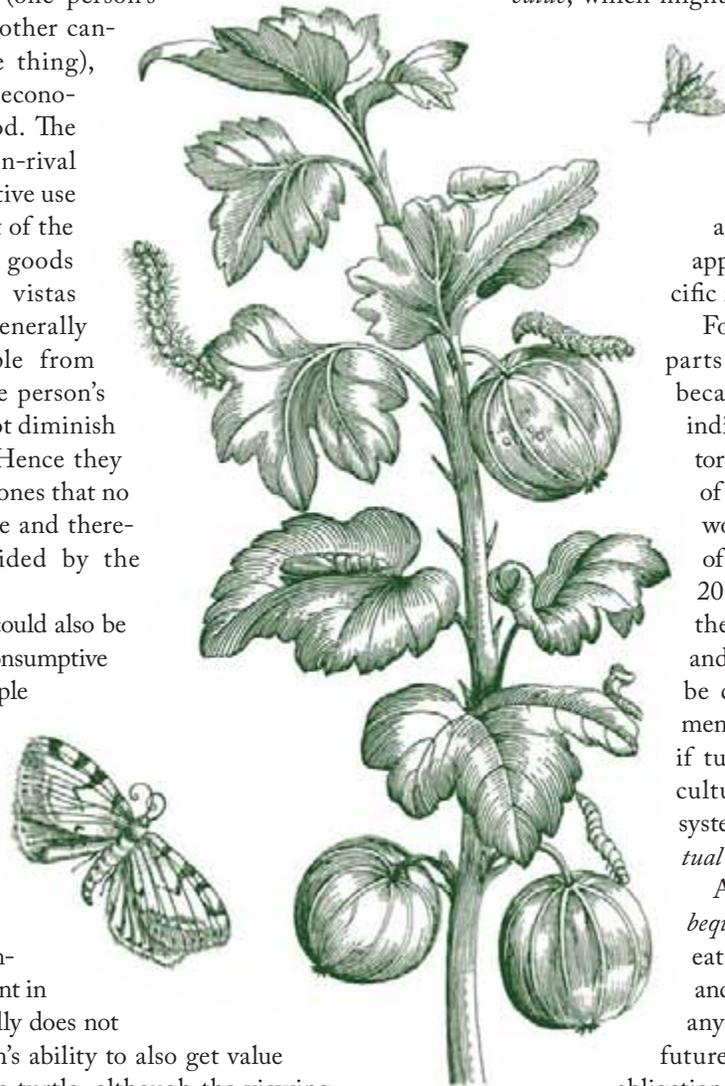
example of option value. An aspect of nature may be worth protecting because through its study, we learn important lessons about nature, potentially applicable beyond this specific instance.

Four instances of nonuse of parts of nature are valued because they produce some indirect utility. Human history contains many examples of elements of the natural world that are central parts of belief systems (Hornborg 2001). Society might say that these have spiritual value and that the believers would be diminished if those elements of nature were lost. So, if turtles were part of some culturally significant belief system, they might have *spiritual value*.

Another nonuse value is *bequest value*. People may not eat, view, or study turtles, and they may not value doing any of these activities in the future. Yet they may feel an obligation to preserve turtles so that

humans in the future may have those opportunities. This perspective is altruistic, where the focus is not oneself or nature; rather, it is a sense of obligation to future humans. Bequest value is also called *altruistic option value*.

Even if people do not eat turtles, or watch, study, or worship them, do not think they will wish to do so in the future, and do not care if future generations have these opportunities, they still might get value just knowing that turtles exist. People often confuse



existence value with intrinsic value, but the concept is very different. The focus of intrinsic value is the aspect of nature, without reference to humans. Existence value is human centered. The presence of turtles is valuable simply because it makes people feel good knowing that they exist.

Finally, utilitarian value can be derived from a person's desire to be well regarded by other people. So, when a person acts to preserve the natural world and lets other people know about the act, this might be a source of social status (Gordon 1977). Here, the person gains *status value* from telling people he or she works to preserve turtles.

Communal Anthropocentric Values

Norton argues that one of the shortcomings of neoclassical economic thinking is the assumption that all values are individualistic. In this model, total value is the sum of the values of all the individuals. He proposes that some values transcend individuals and accrue to the community, but not as the sum of individual valuations. "Communal goods are understood as goods that emerge on a community level, a scale larger than that on which the goods of individuals are observed or calculated, and they are not commensurable with, or reducible to, individual goods or aggregations of individual goods" (2005, 240). Hence, these are known as *communal values*, the ways in which elements in the natural world are important to the community beyond their value to individuals. Sources of this value could be a landscape feature, the Bavarian Alps or the Mississippi River delta, that helps to define a sense of place. Or it could be a cultural artifact, like the Sydney Opera House, that gives a sense of human engagement with place. It might even be legend; think of Paul Bunyan, the mythic giant woodcutter claimed by several forest-based communities from Maine to Michigan. Each of these gives a sense of place that defines community and thus is a collective value.

Outlook

Whatever definition of sustainability is adopted, it is about what matters to people, now and in the future. The difficulty is that choices are necessary. "Measurement of environmental values, especially as they are understood and projected across time, is a central problem for any theory of sustainability" (Norton 2005, 155). Human, natural, technological, and cultural resources are scarce, and allocating those resources to serve the values of one person limits their availability to serve the values of another. Because what people value varies both from person to person and over time, the obvious problem is how

to use values to make choices both within and between generations.

Making these choices is even more difficult than it first appears. How do we weigh the values of different people? In other words, whose values count and by how much? How do we measure and compare different types of values? What if the turtle is at the same time the central icon representing transcendent authority for a spiritual community, in the way that salmon were sacred to Native American groups in the Pacific Northwest, the source of tissue thought to be effective in the future for treating a prevalent disease, a focus of nature-based tourism economy in a developing nation, and a common meat source for soup production and threatened by overharvesting. It would have potential spiritual value, option value, non-consumptive use value, and consumptive use value. Although some economists assert that all relevant values can be measured in dollar terms, no commensurable metric is available for these different values, nor is there an obvious way to compare them systematically if such a metric existed.

Indeed, the criticism of neoclassical welfare theory is that it presumes to make such comparisons, but the method is unsatisfying on ethical terms, creating what some call an accounting problem (Norton and Toman 2003, 233). Welfare economics, the study of human well-being from the distribution and consumption of goods and services, assumes that the present value of net benefits is the appropriate measure of value and that human welfare is improved as long as those whose net benefits are increased could (but do not necessarily) compensate those whose net benefits decrease and remain better off. The assumption that relevant values can be measured in the same terms and that the distribution of net benefits does not matter makes this approach unacceptable in a sustainability context. To be clear about the latter point—the standard theory of welfare economics implies that a bigger pie is always better than a smaller pie, a concept underlying growth theory. Most sustainability definitions, however, include the concept of preserving the future while also enhancing the economic status of the have-nots. This latter addition implies that some redistribution should be made, and thus over time sustainable development should lead to a shrinking of the income gap.

The challenge for sustainability science then is to develop a theory that accommodates multiple values that are not readily commensurable within a system of fair weightings across space and time.

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See also Collective Learning; Community; Education, Higher; Economics, Steady State; Natural Capital; Nuclear Power; Progress

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