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Sarah E. Fredericks [a]

[a] Department of Philosophy and Religion Studies, University of North Texas, 1155 Union Circle #310920, Denton, TX, 7620-5017, USA

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Justice in sustainability indicators and indexes

Sarah E. Fredericks*

Department of Philosophy and Religion Studies, University of North Texas, 1155 Union Circle #310920, Denton, TX 7620-5017, USA

At least since the Brundtland Report, technical assessments of what can be sustained and values about what is desirable to sustain, for whom, and for how long have been intertwined. This intersection is particularly evident in the assumption that justice among people living today and between present and future generations is a key part of sustainability. In official international policy documents and academic studies of sustainability, this justice may include the equitable distribution of environmental benefits and burdens, distributive justice, or the ability of people to meaningfully contribute to decisions that affect their lives, participatory justice. Yet, the process of developing indicators and indexes to track movement toward or away from sustainability has been dominated by technical, economic, and environmental assessments. This raises questions about whether or not indexes align with and thus will monitor and encourage progress toward sustainability in a technically possible and desirable way. To begin to answer this question, this paper identifies definitions of justice used in sustainability discourse and evaluates the degree to which sustainability indicators and indexes align with these concepts. The 2010 Environmental Performance Index, Eurostat's Sustainable Development Indicators, and a group of local indicators and indexes are examined. It is found that the indicators embody various aspects of justice, though they are still significantly limited by the available data, especially as they generally cannot monitor inequities between subpopulations and have a limited capacity to monitor progress toward participatory justice.

Keywords: sustainability; indicator; justice; ethics; Eurostat SDI; 2010 Environmental Performance Index

Introduction

Since the 1992 Earth Summit in Rio de Janeiro called for local and national sustainability initiatives and means of monitoring the progress toward these goals, theories of sustainability indicators have significantly developed and hundreds of sustainability indexes have been constructed. While discourse on sustainability indicators usually focuses on technical aspects of sustainability such as how many fish may be caught before the population collapses, many scholars recognize that sustainability indicators involve normative as well as technical issues (Daly et al. 1989; Peet and Bossel 2000; Dower 2004; Norton 2005; Bleicher and Gross 2010; Burger et al. 2010). Determining what is to be sustained, for whom, and for how long necessarily involves value judgments and technical assessments of what can be sustained under various conditions as do decisions about how to weigh various components of an index. Scholars who examine the relationship of norms and sustainability indexes usually either note that they play a role in sustainability discourse (Dahl 1997), chronicle the role they play (Rametsteiner et al. 2011), or, most commonly, advocate the inclusion of local stakeholders in the index development process (O'Toole et al. 2006; Geczi 2007; Holden 2011). These trends are critical, but insufficient to ensure that normative priorities for sustainability are expressed in sustainability indexes. The analysis below will reveal that more attention to ethics during index development is needed if sustainability indexes are to align with sustainability ethics, particularly justice.

To substantiate these claims, Section 2 notes the ways normative and technical aspects of sustainability are intertwined in sustainability definitions. It also identifies how justice, one of the most prevalent ethical priorities in sustainability literature, is understood. Section 3 examines indexes and indicator sets to determine if and how they align with justice: the 2010 Environmental Performance Index (EPI), Eurostat's Sustainable Development Indicators (SDIs), and several local indicators and indexes. Section 4 summarizes the strengths and weaknesses of the indexes' representations of justice and the research needed to fill these gaps.

Justice in sustainability discourse

Assessments of the way the world works and what can be technically sustained influence what is perceived as right or desirable; ethical priorities influence how the world is understood. For instance, cut-off values beyond which a water pollutant is deemed unsafe depend on both technical assessments of the pollutant's effects on biotic life and on societal willingness to accept certain levels of risk to biota. Technically possible methods of progressing toward sustainability such as killing a large percentage of the population will not be implemented unless accepted by society. Conversely, physically impossible ethical goals for sustainability will not be achieved in the long-run.

Identifying ethical ideas that are or should be a part of sustainability initiatives has been a common theme

*Email: sfrederi@unt.edu

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in sustainability literature (e.g., Engel and Engel 1990; Verburg and Wiegel 1997; van Wensveen 2000). Dominant normative elements of the sustainability movement include the assumption that humans should take responsibility for their actions; that ecosystems, human societies, and sometimes individual species or entities are worthy of being sustained; and that equity or justice between people living today, between those presently alive and future generations, and potentially between humans and other biota are valuable. For example, the Brundtland Report's influential definition of sustainable development, 'meet[ing] the needs of the present without compromising the ability of future generations to meet their own needs' (World Commission on Environment and Development 1987), includes a commitment to equity between living people and parity between present and future generations. Importantly for this study, a commitment to intra- and intergenerational equity is infused throughout Agenda for the Twenty-First Century (Agenda 21), a blueprint for progressing toward sustainable development adopted at the 1992 Earth Summit in Rio de Janeiro by representatives of over 170 nations, which catalyzed the sustainable development index movement (Robinson et al. 1993; Fredericks 2010). The prioritization of equity and justice was maintained in later international, national, and local policies which shape sustainability indexes.

Many possible ethical justifications for this focus on equity and justice exist including Rawlsian ideas of justice as fairness, rights-based arguments, or theological claims about the worth of individuals. Such justifications are not, however, the focus of this study which starts with the inclusion of ethics, including justice and equity, in sustainability discourse and asks whether sustainability indicators exemplify these ethical principles. After all, if indexes are to align with and monitor progress toward visions of sustainability articulated in policy documents and the sustainability movement as a whole, they must align with both the technical and normative aspects of sustainability.

To evaluate whether sustainability indexes align with the ethical aspects of sustainability discourse, a more detailed understanding of these ethical principles is necessary. Since sustainability policy documents rarely sufficiently articulate the details of their ethical ideas, I utilize the ways that environmental ethicists have clarified the ideas of inter- and intragenerational justice that permeate sustainability literature discussed above.

In the sustainability literature, justice is usually envisioned as the equitable distribution of goods, services, and opportunities between and among groups of people. Here, equity does not mean an absolutely even distribution of goods and services. For example, it is recognized that a child will need fewer calories a day than an average adult, who will need fewer than a manual laborer. Rather, equity implies that uneven distribution is only ethical if necessary to meet basic needs and is not based upon morally arbitrary considerations such as race or ethnicity (Figueroa and Mills 2001). This type of justice, often named distributive justice, assumes that people have the basic right to the conditions necessary for life. Distributive justice may be applied to environmental benefits and the burdens environmental degradation places on individuals and communities. Thus, it is deemed unjust for groups to experience environmentally based diseases, loss of culturally important ecosystems, or rising seas at levels disproportionate to their contribution to the problem. Yet, research suggests that people of color, indigenous peoples, and the poor disproportionately experience environmental burdens and are less likely to have the resources to change their situations, indications of injustice (Bullard 1993; Agyeman et al. 2003; United Church of Christ Justice and Witness Ministries 2007; Harlan et al. 2008). Recognizing this connection, many sustainability initiatives focus on improving the living conditions of disadvantaged people.

Sustainability initiatives often also emphasize participatory justice, the just distribution of participatory power during the development of environmental policies and indicators (Robinson et al. 1993; Figueroa and Mills 2001; Eurostat 2012a, 2012e). Commitments to human rights and/or democracy may undergird the assumption that it is right, just, or fair to enable people to be involved in processes that will affect their lives. Yet, numerous studies indicate that people of color, minority groups, and the poor have fewer opportunities to meaningfully participate in such processes because they often have limited economic resources and political power and because their ecosystemic knowledge is often ignored (Cole and Foster 2001; Figueroa and Mills 2001; Harding 2007; Ryall 2007). Given observed barriers to participatory justice, the fact that participatory injustices can exacerbate distributive injustice, democratic ideals of participation, the fact that local ecological knowledge may be critical to progress toward sustainability in a location, and the fact that community participation can increase the success of sustainability endeavors, theories of sustainability policy-making and index development increasingly call for the involvement of local people and communities. Indeed, participatory processes have been implemented in sustainability initiatives and thus foster participatory justice (Lopez-Ridaura et al. 2002; Bell and Morse 2003; Norton 2005; Fraser et al. 2006; Reed et al. 2008; Holden 2011).

Consequently, for sustainability indexes to embody participatory and distributive justice among people living today and between present and future generations, they will need to monitor participation, register differences between the experiences of a variety of subgroups within the population being studied, and be attentive to the impact of the population under study on people in distant places and times.

Ethical analysis of sustainability indexes

Given this understanding of distributive and participatory justice as prioritized in sustainability discourse, we now can evaluate the degree to which sustainability indexes

embody these ideas of justice. Such alignment is necessary if indexes are to monitor progress toward and reinforce visions of sustainability that are not only technically possible but also ethically desirable. Since nearly 900 SDIs have been identified (International Institute for Sustainable Development 2012), a representative sample will be examined here: the 2010 EPI (Yale Center for Environmental Law and Policy et al. 2010), the set of SDIs monitored by Eurostat (Eurostat 2012b), and a group of indexes constructed with stakeholders for use at a local level (Praneetvatakul et al. 2001; Lopez-Ridaura et al. 2002; McMahon 2002; Fraser et al. 2006; Gallego Carrera and Mack 2010). The set includes representatives of both national and local indexes; those developed solely by academics or professional index developers and those developed with input from local communities; and composite indexes that aggregate a group of indicators (the 2010 EPI, and some local indexes) as well as indicator lists that keep the indicators separate (SDI and most local initiatives). The following ethical evaluation of these indexes demonstrates that while sustainability indexes do align with justice to some degree, more research is needed if they are to sufficiently monitor distributive and participatory intra- and intergenerational justice.

2010 Environmental Performance Index (EPI)

Early initiatives to develop comprehensive sustainable development indexes were significantly hindered by the nascent state of methods of monitoring sustainability and the unavailability of data with which to do so. The 2010 EPI responded to this challenge by focusing on widespread policy targets, including those in the United Nation's Millennium Development Goals (MDG). Thus, it utilizes the most well-studied metrics and capitalizes upon new data collection efforts prompted by the MDG. These efforts let the 2010 EPI monitor a basic measure of the environmental burden of disease, a critical factor for environmental justice (Yale Center for Environmental Law and Policy et al. 2010). Better data and more nuanced indicators also enable the 2010 EPI to be applicable to countries along a wide spectra of progress toward sustainability. Yet, it is rarely able to monitor variations in environmental or social conditions within a nation, inhibiting its ability to monitor progress toward many types of justice.

The 2010 EPI is the latest of several iterations of the EPI developed by the Yale Center for Environmental Law and Policy and the Center for International Earth Science Information Network at Columbia University in collaboration with the World Economic Forum and the Joint Research Centre of the European Commission. Following the aim of the MDG to reduce poverty, support growth, and achieve sustainable development by 2015, the EPI monitors whether policies reduce 'environmental stresses on human health' and promote 'ecosystem vitality and sound resource management' (Esty et al. 2006). EPI developers see their index as focusing on environmental performance issues 'measuring the ability of countries to actively manage and protect their environmental systems and shield their citizens from harmful environmental pollution' while fostering 'action, accountability and broad participation.' These issues are monitored by specific indicators for which national governments can be accountable rather than trying to monitor the full social, economic, and environmental dimensions of sustainability (Yale Center for Environmental Law and Policy et al. 2010). This focus on accountability is supposed to avoid variations and complexities in sustainability definitions which, it is claimed, can hinder measurement. While the EPI developers see their index as a move away from monitoring sustainability, it is included in this analysis of sustainability indexes and indicators since it includes necessary but not sufficient preconditions for sustainability, particularly in the interaction of human and broader environmental systems. Thus, while it is likely that the EPI will not embody all aspects of justice that may be associated with sustainability since it focuses on ensuring access to basic conditions for development and quality of life (distributive justice), its alignment or lack thereof with distributive justice can still contribute to this study of justice and sustainability indexes.

The 2010 EPI is divided into two equally weighted sections, Environmental Health and Ecosystem Vitality. Environmental Health monitors how environmental degradation impacts human health. Indicators of the environmental burden of disease comprise half of Environmental Health; the other half tracks the effects of indoor and outdoor air pollution on humans and access to water and sanitation. Ecosystem Vitality monitors 'ecosystem health and natural resource management' (Yale Center for Environmental Law and Policy et al. 2010). Half of this subindex is comprised of climate change indicators; the other half includes equally weighted indicators monitoring agriculture, fisheries, forests, biodiversity and habitat, and the effects of water and air quality on ecosystems (Yale Center for Environmental Law and Policy et al. 2010).

The 2010 EPI makes significant strides with respect to the principle of justice, in part because it has access to new data sets and in part because of its distinctive methodology. From a global perspective, it aligns well with the principle of justice insofar as it focuses on the environmental burden of disease – the decrease in healthy years of life and total life expectancy due to environmental conditions. It also directly monitors water quality and air pollution, the major contributors to the diseases (diarrheal diseases and lower-respiratory infections), which are most significant and dependent on controllable environmental factors (Yale Center for Environmental Law and Policy et al. 2010). Through these measures the index is able to better recognize the tight coupling between human care for or harm to the environment and the influence of environmental conditions on humanity. Since the environmental burden of disease is not equally spread throughout populations, but is experienced most by those without political, economic, or social resources, focusing on improving this indicator can prompt a focus on the least well off, a component of ensuring that all have their basic needs met.

The index also fosters preconditions for distributive justice insofar as its basic calculation methods and particular indicators enable it to apply to a wide range of countries. For instance, for the first time in the 2010 EPI, its developers used a log scale to calculate many indicators in order to differentiate between nations near the target of an indicator while still registering a difference between 'leaders and laggards' (Yale Center for Environmental Law and Policy et al. 2010). Additionally, the index developers utilized three indicators of greenhouse gas emissions to be able to include the types of emissions which dominate in different types of nations (e.g., from agricultural, electricity generation, industry) (Yale Center for Environmental Law and Policy et al. 2010). These nuances within the index enable stronger comparisons between countries with significantly different conditions and developmental trajectories while ensuring that different types of emissions are counted equally.

Limitations to the EPI's alignment with justice include the fact that environmental risks from toxins and indoor air pollution other than solid fuels are not monitored by the index due to international data. Neglecting these effects, which may be significant in developing countries, especially for children, exacerbates the likelihood that environmental health risks in developed countries are under-monitored by the index, conditions that make it more difficult for index users to understand and respond to injustices. The developers of the 2010 EPI are aware of these limitations but are hindered by the limitations of available data.

Additional limitations arise because the index does not monitor the critical aspects of environmental justice related to economic or social conditions. For instance, the EPI developers note that economic and social factors including 'per capita income, corruption (the accountability, transparency, and corruption of the public sector), and government effectiveness' are highly correlated with strong environmental performance (Yale Center for Environmental Law and Policy et al. 2010), that economic development correlates with a decreased environmental burden of disease, and that quality of health care even more strongly correlates with a reduced disease burden (Yale Center for Environmental Law and Policy et al. 2010). Yet, the 2010 EPI does not monitor these drivers of environmental health or ecosystem vitality. Similarly, it does not track cultural impacts of environmental damage such as the loss of sacred land or the inability to safely practice traditional forms of hunting, fishing, or farming. Additionally, its methods of monitoring ecosystemic vitality and environmental stress on human heath generally do not enable index users to examine disparate environmental burdens within a nation. Users cannot tell, for example, whether environmental diseases are experienced more significantly by particular racial, ethnic, age, gender, or geographic groups. Thus, the index is not able to monitor distributive injustices. Furthermore, the index also fails to track participation in decision-making and does not encourage or enable lay participation in its own development. Since these limitations are directly related to data limits and the EPI developers regularly revise the index as new data become available, future versions of the EPI may possibly include indicators of distributional disparities within nations. Yet, since the narrative explanation of the 2010 EPI does not acknowledge the desire to monitor distributional disparities within populations though it recognizes other limitations of the index its developers are actively working to overcome (Yale Center for Environmental Law and Policy et al. 2010), it seems unlikely that such factors will be included in near future versions of the EPI. Admittedly, given the EPI's focus on existing policy targets as outlined in the MDG, these limitations are as much limitations in the focus of the MDG as in the EPI itself.

In sum, the 2010 EPI targets social dimensions of sustainability including distributive justice insofar as it focuses on the direct effects of environmental degradation on human health, but it is limited in its ability to monitor the disparate distribution of environmental benefits and burdens within a nation or participatory justice.

Eurostat's SDIs

While the examination of the 2010 EPI above yields a general sense of how justice is incorporated into an index, the EPI is not an official index and thus its influence on policy-making is not certain or direct. The SDIs developed by Eurostat, the statistical office of the European Union, do have this official status and therefore a greater possibility for direct influence on sustainability initiatives. Additionally, Eurostat has one of the largest and most robust data sets regarding international sustainability. Thus, examining its indicator set for consonance with justice will help us understand the degree to which justice is involved in EU sustainability initiatives and the limitations of some of the most cutting-edge data. The analysis below reveals that the Eurostat SDIs align with justice to the degree that they foster democratic decision-making by making data available to all and monitor basic preconditions for quality of life, intergenerational justice, and participatory justice. They are, however, limited by the availability of data, especially regarding differences in environmental benefits and burdens between diverse demographic groups and because they do not involve lay people in index development, a way to achieve participatory justice.

The EU thinks readily available, accurate data are necessary for democracies insofar as leaders need statistics for sound decision-making and the public requires them to evaluate their society and leaders. Thus, Eurostat 'works with Member States to define common methodology . . . or include appropriate questions when gathering national data' to yield standardize statistics across the EU to 'enable comparison between countries and regions' of the EU (Eurostat 2012c). Eurostat gathers statistics about 'economy and finance'; 'population and social conditions'; 'industry, trade and services'; 'agriculture

and fisheries'; 'transport'; and 'environment and energy' (Eurostat 2012d). As it makes such data freely available on its website, Eurostat enables preconditions for the participation in and evaluation of decision-making, elements of participatory justice.

Importantly for this study, Eurostat tracks at least 130 SDIs categorized in the themes of 'socio-economic development', 'sustainable consumption and production', 'social inclusion', 'demographic changes', 'public health', 'climate change and energy', 'sustainable transport', 'natural resources', and 'global partnership' (Eurostat 2012b). Eleven 'headline' indicators focused on the broadest goals of the EU Sustainable Development Strategy (SDS), and based on 'robust' data yield an overall picture of an EU nation's progress toward or away from sustainable development (Eurostat 2012a).

The SDIs were developed to align with the SDS which 'sets out the objective of achieving improvement of the quality of life for present and future generations' (Eurostat 2012a). In the elaboration of the SDS, the EU expands upon these ideas, clearly aiming for an equitable distribution of at least basic resources and services: 'Sustainable development . . . stands for meeting the needs of present generations without jeopardizing the ability of futures generations to meet their own needs – in other words, a better quality of life for everyone, now and for generations to come. It offers a vision of progress that integrates immediate and longer-term objectives, local and global action, and regards social, economic and environmental issues as inseparable and interdependent components of human progress' (Eurostat 2012e). Here, again we see an assumption about justice: 'quality of life' is to be improved for those alive today and for future generations. To do so, selectively within present generations or to privilege present or future generations is not acceptable to the EU. Certainly, then, the EU aims to promote distributive environmental justice. Coupling the EU's prioritization of democracy with its aims for improving quality of life for all in the present and future indicates that the SDIs should enable and promote distributive and participatory justice if they are to align with the goals of the European Union, Eurostat, and the SDS.

The SDIs reflect this commitment to justice in several key ways. They move toward distributive justice when they focus on the least well off, consider future generations, and occasionally examine the international impacts of the nation studied or disparities between demographic groups. Participatory justice, or its preconditions, is fostered by the SDI in the basic collection and dissemination of data, in limited surveys of citizen perceptions of environmental conditions and their trust in government, and in measures of participation in democracy. Despite these moves toward justice, the SDIs do not fully embody it because their ability to track disparities between demographic groups is quite limited and they lack the desired data. Let us examine each of these trends in turn.

Multiple indicators of the set of SDIs focus on the least well-off to ensure that their basic needs are being met, one foundational aspect of distributive justice. For instance, the index monitors the number of people at risk for poverty through indicators of poverty, material deprivation, access to labor markets, and education, recognizing that poverty can hinder the ability of people and their descendants to participate in society (Eurostat 2012b). Of course, monitoring poverty risk and decreasing the number of people at risk of poverty does not necessitate that all will be equally included in society or that all goods and services will be justly distributed, but it does help ensure that basic needs are distributed equitably. Similarly, monitoring the healthy life years and life expectancy of newborns draws attention to the most basic preconditions for a just and sustainable life – life itself (Eurostat 2012b).

SDIs also monitor equitable distribution between current and future generations as they prioritize decreasing greenhouse gas emissions, energy intensity, and fossil fuel dependence while increasing renewable energy use and indexes of biodiversity (Eurostat 2012b). Without such resources, the current poor and marginalized, and future generations in general, will have fewer environmental opportunities than the well-off in the present. Additionally, the indicator set aims to be future-oriented insofar as it monitors whether the economy is decoupled from the use of raw materials and environmental destruction to ensure that economic growth can continue without consuming ever increasing amounts of natural resources (Eurostat 2012b). Finally, the SDI set demonstrates the priority Eurostat places on balancing the needs of present and future generations as it monitors the economic conditions and employment of those over 65-years old (Eurostat 2012b). These indicators help determine whether and the extent to which retirees now and in the future will have their needs met and whether the workforce will be economically burdened by ever increasing populations of retired people.

The third general way the SDIs prioritize distributive justice is by monitoring whether and to what degree there is a discrepancy between the access certain demographic groups have to conditions necessary for quality of life. For example, the indicators of healthy life years and life expectancy at birth monitor these statistics for the population as a whole and for males and females as separate groups (Eurostat 2012b). Disaggregating the data could help indicator users determine whether males or females experience greater health risks within a society and work to address such imbalances. Other indicators are also disaggregated by subpopulation, generally with respect to gender (e.g., employment rate, people at risk of poverty, life expectancy) though sometimes they disaggregate data with respect to age (unemployment, risk of poverty), level of education (employment rate, risk of poverty), household type (risk of poverty), and geographic region (dispersion of regional GDP per inhabitant) (Eurostat 2012b).

While such disaggregation can enable people to recognize difference and possible injustices between groups, many key indicators focus on averages to the extent that they can mask differential opportunities for sustainability

within a nation (Eurostat 2012b). For example, the indicator of fish catches beyond 'safe biological limits' only includes fishing in the North East Atlantic. Thus, monitoring biodiversity in other places and disparate access to biota within and between nations is not possible using the SDIs. Similarly, the SDIs do not track differences in social (e.g., healthy life years) and economic (e.g., distribution of GDP per capita) conditions by income, race, ethnicity, or other demographic factors which may reveal significant inequities. For example, measures of greenhouse gas emissions are not disaggregable in the SDI by the geographic regions or demographic groups that may be disproportionately harmed by them (Eurostat 2012b). Admittedly, these limitations arise in part from a lack of reliable consistent data across EU Member States. In some cases, as with the fish catch indicator, Eurostat SDI developers recognize these limits and are working to overcome them (Eurostat 2012b). Yet, even with these advances in data collection and analysis, it is unlikely that the Eurostat SDIs will overcome the limits of aggregated data because they, like the 2010 EPI developers, rarely discuss the need to disaggregate data according to demographic groups.

The fourth way the SDI set monitors an aspect of distributive justice is by tracking the effects of the nation in question on other nations to monitor whether one nation's progress toward sustainability comes at the expense of another. In particular, a SDI tracks the amount of official development assistance given to other countries as a share of GNP, recognizing that aid may be necessary for improving and ensuring the base quality of life for global solidarity (Eurostat 2012b). Certainly, official development aid is not the only source of aid or economic investment in other nations, as Eurostat recognizes, but monitoring it is a step toward economic justice. The indicator set could benefit from indicators to monitor the environmental impact of the studied nation on other nations. For example, the resource productivity indicator aims to decouple growth from environmental degradation by monitoring the 'ratio between GDP and the . . . total amount of materials directly used by an economy' (Eurostat 2012b). Yet, as the index developers recognize, this means that natural resources indirectly used by a nation's economy are not counted in this indicator. Thus, environmental goods and the waste assimilative capacity of other nations indirectly used by the nation being monitored will not be tracked. This means that the nation in question could be seen as moving toward sustainability only because it pushes others away from short- or long-term social, environmental, or economic wellbeing, a situation that does not promote justice. Unfortunately, given current data, analytical tools, and the structure of the SDI, this limitation cannot be fixed. In sum, the SDIs do align with justice since they acknowledge the possibility of unequal distribution of goods and services within nations though they do not fully account for the environmental burden EU nations have on other countries.

The SDI set also includes two types of movements toward participatory justice beyond increasing data availability. First, two indicators, the 'proportion of the population living in households considering that they suffer from noise' and the level of citizen's confidence in EU institutions, are based upon survey data (Eurostat 2012b). Such indicators involve the population in monitoring sustainable development and demonstrate that Eurostat leaders recognize that public perceptions can be critical aspects of sustainability. In other words, people's quality of life and progress toward sustainability are not just based on standardized 'objective' measures of environmental and social conditions but also on how people perceive such conditions. Since stress can lead to or exacerbate the physical and mental health problems of individuals and can eventually degrade community vitality, perceived environmental stress and a lack of trust in government can have a variety of effects beyond the most direct effects most often measured. Thus, monitoring perceptions of environmental and social vitality may serve as a proxy for environmental and social vitality. Admittedly, the number and scope of such indicators in the SDI set is limited as such data are difficult to come by, but the fact that such indicators are included at all suggests that Eurostat recognizes that public participation, an aspect of participatory justice, is a critical element of monitoring sustainability. Second, the Eurostat SDI set also includes indicators which track public participation in government and the openness of the government (Eurostat 2012b) through measures of voter turnout rates, the availability of online government services, and citizen's reported confidence in EU institutions. The fact that these indicators are included in the SDI set demonstrates that Eurostat is prioritizing participatory justice to some degree even though the public is not directly involved in the selection and development of its indicators.

As we have seen, the SDIs move toward distributive and participatory justice in a number of ways. They monitor distributive justice by focusing on basic needs and monitor indicators significant for intergenerational justice (e.g. those about climate change) as does the 2010 EPI. Advancements in the SDIs compared to the 2010 EPI include attempts to monitor the international economic effects of the studied nation as well as indicators of community perceptions of environmental quality (noise) and trust in government, though these indicators still face significant limitations. Indeed, data limitations in general and the frequent focus on average data rather than data disaggregated by demographic group mean that the SDIs can often only monitor average moves toward sustainability not whether some parts of the nation's ecosystem or inhabitants are being pushed away from sustainability. These conditions inhibit the SDIs' ability to fully align with the commitment to justice for all embedded in Eurostat's SDS. Additionally, since the development of the SDI (and the 2010 EPI) relies exclusively on expert indicator developers, the process of indicator development does not facilitate participatory justice as it would if people affected by the issues monitored by the indicators were involved in their development. Local indexes, the subject of the next section, work to counter this trend.

Local indexes

Endeavors to develop local sustainability indexes were largely sparked by the local Agenda 21 initiative which aims to foster local sustainability efforts that are a necessary complement to national or global efforts (Agyeman and Evans 1995; McMahon 2002; Fraser et al. 2006). Local indexes may focus on a particular aspect of life such as agricultural sustainability or attempt to monitor sustainability as a whole. As these indexes are increasingly developed through participatory processes involving community members to ensure that local values and knowledge are incorporated into the indexes, they have the potential to avoid some ethical limitations of national indexes. Local indexes can be expected to align with distributive and participatory justice insofar as they are implicitly or explicitly inspired by Agenda 21 and the Brundtland Report, both of which prioritize such values (Lopez-Ridaura et al. 2002; McMahon 2002; Fraser et al. 2006; Gallego Carrera and Mack 2010). Yet, local, participatory-based sustainability indexes often still fall short of embodying justice because they can have a very narrow focus and be hindered by data limitations.

As hundreds of local sustainability indexes have been developed, the analysis below is based on a representative sample of indicator sets or local indexes. Selected indexes include quality of life indicators for the city of Bristol, UK (they equate quality of life with environmental, ecological, and societal sustainability); a meta-analysis of 20 case studies about small-scale, local agricultural communities in Mexico and Latin America; forestry indicators in western Canada developed by collaborating First Nations communities, forestry companies, and environmental groups; environmental indicators for pastoral regions in the Kalahari; comprehensive sustainability indicators for the island of Guernsey, UK; agricultural sustainability indicators in Northern Thailand; and indicators of energy sustainability developed for the EU (Praneetvatakul et al. 2001; Lopez-Ridaura et al. 2002; McMahon 2002; Fraser et al. 2006; Gallego Carrera and Mack 2010). The analysis focuses on indexes and indicators which emphasize the social dimension of sustainability since those dominated by ecological and economic concerns rarely directly investigate the environmental–human interface as is necessary for justice studies. To ensure a representative sample of indexes within this focus on social sustainability, those selected represent communities of various sizes from around the world and a variety of aspects of sustainability (e.g., forest, agricultural, and energy sustainability). Selected indicators also represent different methods of community participation in index development from including community participants from the beginning (Lopez-Ridaura et al. 2002; Fraser et al. 2006) to developing or including participation over time (McMahon 2002), to including estimates of community priorities by experts familiar with community groups (Gallego Carrera and Mack 2010). Given the diversity and number of indicators in some of the local indicator sets – 141 social indicators in the Western Canada forestry study and 64–84 in the assessments of land use in the Kalahari (Fraser et al. 2006; Reed et al. 2008) – the following analysis focuses on novel indicators and methods related to justice compared to those discussed above.

Indicators in local indexes are quite innovated compared to the often repetitious basic measures of water quality, greenhouse gas emissions, educational rates, and GDP in the national indexes. Certainly, many local indexes monitor such common indicators as well, but typically also include indicators particular to the place being studied. For example, specific plants attractive to livestock in the Kalahari are used as indicators of environmental and social sustainability there (Fraser et al. 2006; Reed et al. 2008). Local indexes may also monitor environmental issues on a smaller scale as when they track amounts of household waste, household recycling rates, 'complaints of dog fouling', access to public transportation, and local noise levels (McMahon 2002; Fraser et al. 2006; Gallego Carrera and Mack 2010). Many also include a variety of indicators of social sustainability or community vitality such as attendance at cultural events or access to green space, subjective experiences of health, fear of crime, or the percent of the population dissatisfied with their neighborhood (McMahon 2002; Fraser et al. 2006; Gallego Carrera and Mack 2010). These indexes are also more likely to link technological assessments of sustainability to societal well-being as when Diana Gallego Carerra et al. monitored the relationship of 'political stability and legitimacy' to energy use and the 'social components of risk' of the energy sources they studied (Gallego Carrera and Mack 2010). Similarly, some index developers use both traditional ecological knowledge and modern science to identify culturally relevant ecological bases for sustainability indicators (Reed et al. 2008). All of these indicators suggest that local indexes more readily tap into some of the values of their communities to enable participatory justice than national indexes.

Community-based indexes can also focus on equity with respect to basic needs such as food sufficiency (Praneetvatakul et al. 2001), water quality, basic education, life expectancy, and 'the percent of homes and business with affordable energy services from renewable and efficient energy sources' (McMahon 2002; Fraser et al. 2006). Sometimes they even monitor an aspect of sustainability pertinent to a particularly vulnerable population. For example, the Bristol study monitors 'facilities for disabled motorists and pedestrians' (McMahon 2002). Studies in Western Canada focused on equity as they focused on groups that have traditionally been disadvantaged by monitoring 'aboriginal life expectancy at birth', and the number of women in government (Fraser et al. 2006). Equity indicators often emphasize social equity over equitable environmental conditions. Exceptions include the standard measurements of water quality and sanitation; health impacts from pesticides (Praneetvatakul et al. 2001), and, potentially, the life expectancy of aborigines (if they are disproportionately exposed to environmental burdens)

(Fraser et al. 2006). Gallego Carrera et al. move toward assessing the distribution of environmental benefits and burdens by monitoring expert opinions of the 'perception and fairness of risk distribution and benefits in neighboring communities' and the 'subjectively expected health consequences of normal operation' of various energy sources (Gallego Carrera and Mack 2010). Certainly, surveys of the general population would more directly monitor such perceptions but soliciting expert opinions may be a necessary time- or cost-saving measure. In sum, these local sustainability indexes often methodologically align with justice through their involvement of local people in index formation.

It is important to note, however, that involving local lay people in the development of the indicator set or index, in the collection of data, or through surveys of their perceptions, does not necessarily ensure that participatory or distributive justice is reached. Studies may exclude particular groups of local people. Additionally, the variety of values held by a community may not be represented in the index, a particular danger for indexes focused on a particular aspect of sustainability such as agriculture. For example, Reed et al.'s study nicely meshed local and standard indicators of the sustainability of pastoralism in the Kalahari but did not monitor the cultural impacts of ecosystemic changes or the distribution of access to environmental benefits and burdens within the population (Reed et al. 2008). Thus, while local indexes developed through participatory processes can take significant steps toward participatory justice, they do not necessarily reach this goal.

Local indexes can also fall short of justice because they emphasize local impacts of local activities to the extent that they ignore their impacts on distant places. The major exception to this trend occurs in indexes which monitor greenhouse gas emissions since they affect the world (McMahon 2002). Thus, while the indexes enable locals to take responsibility for environmental actions and work toward justice in their own location, they may not facilitate and, indeed, may hinder justice elsewhere.

The narrow focus of local indicators does, however, have some advantages. Many local indexes are able to align with a part of the principle of justice *because* of their narrow focus which enables local stakeholders to be involved in index development. These participatory methods let people interact with policy-makers, gain confidence and skills related to sustainability progress and policy-formation, and shape the policies that affect them, aspects of participatory justice. Thus, local indexes, especially when developed with local input, enable the values, ecosystems, and community structures of their places to influence the indexes. This methodological alignment with participatory justice can lead to novel indicators while still including basic environmental and social measures (greenhouse gas emissions, life expectancy) found in many indexes. As always, limited data and methods for monitoring sustainability hinder local indexes.

Summary and conclusion

Several trends in the way sustainability indexes and indicators align with justice have emerged. First, improvements in basic social and environmental indicators such as the average income, health, education, and access to clean water of a nation are assumed to represent a move toward sustainability. Since these measures center on improving quality of life through the distribution of goods and services, they align with distributive justice. Indirectly the indexes often also monitor preconditions for intergenerational distributional justice as they monitor indicators such as greenhouse gas emissions which will significantly affect future generations. Additionally, Eurostat and local indicator sets move toward participatory justice by monitoring self-reported subjective assessments of conditions in the community (McMahon 2002; Fraser et al. 2006; Gallego Carrera and Mack 2010; Eurostat 2012b). Local indexes may also foster participatory justice by directly involving those affected by the index in its development (Praneetvatakul et al. 2001; Lopez-Ridaura et al. 2002; McMahon 2002; Fraser et al. 2006).

Despite these significant moves toward justice, sustainability indexes and indicator sets face three major limitations with respect to monitoring justice: (1) the assumptions of trickle-down justice, (2) limited attention to participatory justice, and (3) insufficient data which contribute to the other problems. Recognizing these limitations aids the identification of future directions for research.

First of all, many indicators and indexes presume a 'trickle-down' theory of justice with respect to sustainability as they assume that increasing the *average* quality of life or access to environmental benefits or reducing *average* exposure to environmental harms will improve the lot of *everyone* in the present and future. Yet, evidence of persistent widespread environmental injustices challenges this theory. Efforts to improve environmental conditions without explicit attention to distributive justice will probably also follow these patterns of injustice. For instance, grandfather clauses in environmental legislation, which allow existing facilities to maintain current levels of pollution though new facilities must meet stricter standards, make trickle-down justice difficult. Such clauses are intended to ensure that existing businesses are not crippled by environmental laws. However, they also make it more difficult for people in the vicinity of the most polluting locations to improve their environmental conditions since owners of these facilities, which may be four to ten times as polluting as facilities that comply with new regulatory standards, often keep old facilities operating as long as possible to take advantage of the laxer environmental standards (Gorovitz Robertson 2008). Thus, it can be difficult to raise the quality of life and the environmental conditions of the worst off due to engrained social structures. Consequently, if equity for *all* is truly a goal of sustainability initiatives, as indicated in international policies about sustainable development and in sustainable index theory, and people want to monitor progress toward

this and other sustainability goals, then more modes of tracking the distribution of environmental and social goods and services, especially those disaggregated by a variety of demographic factors, are needed. Admittedly, index developers may need to use average data because data examining subpopulations are not available or reliable. Noting such limits and the fact that they can hinder assessments of progress toward sustainability and therefore sustainability initiatives however may help spur more data collection and analysis to improve future indicators.

A second class of limitations are those regarding participatory justice. Indicators that monitor the ability of people to participate in decision-making that affects them by tracking perceptions of sustainability or monitoring progress toward community-specific concepts of sustainability are quite rare except in local indexes. Yet, as we saw in the study of local indexes, enabling the participation of lay people in index construction can significantly add to the richness of sustainability indicators as these indicators more directly monitor links between environmental conditions and quality of life. Since indicators are nearly always constructed by experts without lay participation until one gets to the local level, perceptions of sustainability which may be linked to stress or community vitality, local ecological knowledge, and methods of monitoring many social or cultural aspects of sustainability are often left out of indexes. For example, while indexes may monitor the environmental burden of disease, biodiversity loss, and greenhouse gas emissions, they do not have a measure of the impact of such factors on cultural heritage or community wellbeing and only rarely an individual sense of wellbeing. Many groups around the world not only want their ecosystems, environments, and the preconditions for community life to be sustained but also desire the ability to live as their ancestors did in relation to biota, land, mountains, water, and each other. It may be the case that such possibilities are lost or drastically diminished as rising sea levels inundate low lying areas, as heavy metals or oil spills make fishing in traditional places dangerous or as pollution in sacred rivers challenges traditional beliefs. Yet, sustainability indicators, aside from a few local indexes (Lopez-Ridaura et al. 2002; McMahon 2002; Fraser et al. 2006), do not monitor these higher-level impacts.

Admittedly, involving locals in index development and including such indicators can be complex and resource-intensive endeavors. They may be overshadowed if they are not considered 'basic needs' by index developers or if index developers think that basic environmental, ecological, and social indicators will sufficiently monitor progress toward these more complex issues as well. At minimum, however, those who develop and use the sustainability indicators should recognize that they do not live up to the ideals of participatory and distributive justice articulated in much sustainability literature and by many communities. Ideally, research should be done to determine whether current indicators can also serve as proxies for monitoring progress toward these aspects of sustainability even if new indicators are not developed. Other directions for future research include developing survey-based methods of perceptions of particular aspects of sustainability (e.g. health, cultural vitality) and methods of aggregating indicators specific to particular locations or community into national indexes (Fredericks 2011). Interdisciplinary teams involving scholars trained in ethical and cultural analysis as well as local community members and the economists and environmental scientists who are traditional index developers would aid these efforts by helping to ensure that technical and ethical dimensions of sustainability are represented in indicators and indexes. Developing and implementing such measures will be challenging, but the fact that local index initiatives, and occasionally Eurostat, are doing this indicates that it is possible. Emphasizing ease of data collecting during index development and using distributed modes of data collection in which local community members collect data may increase the feasibility of including justice in sustainability indexes. Certainly, more work is needed to build upon the strengths of existing indicators with respect to justice and create new index development methods and indexes to ensure that indexes are able to monitor and encourage distributive and participatory justice for all. Doing so will, however, enable indicators and indexes to better align with the normative as well as technical aspects of sustainability and thus assess and foster movement toward both of these interrelated elements of sustainability.

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1 Introduction

Since the late 1980s "sustainability" and the related term "sustainable development" have grown from relative obscurity to popular ways of expressing the interconnection of environmental, economic, and social goals. Indeed, these ideas have been key parts of international, national, regional, and local governmental policies; business plans; mission statements of nongovernmental organizations including religious groups; and the ideals of average citizens. While there are many definitions of sustainability and sustainable development, let us look to the most common for now, "meet[ing] the needs of the present without compromising the ability of future generations to meet their own needs" (World Commission on Environment and Development 1987: 8). Imagine that citizens of a nation have this vision of sustainable development as one of their primary goals. To move towards it they begin making laws: to combat environmental degradation they mandate composting and recycling and regulate air pollutants and nuclear waste. Since they maintain that sustainability requires economic stability they devise incentives for green businesses. They also believe that a safe environment and strong economy will not mean much to humans if they do not have a high quality of life so they encourage health care, meaningful work, and the enrichment and preservation of cultural traditions for all people through a variety of policies and programs. But as is typically the case, policy initiatives alone will not be satisfying to the people; they will also want to know whether their new initiatives actually aid movement toward sustainability. Are the air and water cleaner than they once were? Is the economy able to thrive within environmental restrictions? Are all people able to live healthy and fulfilling lives? Will all people, segments of the economy, or ecosystems benefit from the new policies? If not, what factors determine uneven distribution of benefits and burdens? To answer these questions, they will turn to indicators and indexes, tools, usually quantitative, used to monitor progress toward a goal.

Yet as Chapter 5 will show, sustainability indexes only align with several of the most central ethical claims of the sustainability movement, including that of justice between and among generations, in the most cursory way. This mismatch matters because indexes drive social behavior: what they

monitor often becomes *the* aim of future policy and action. Thus, the policy-makers, businesses, nongovernmental organizations, and citizens are unlikely to undertake activities that faithfully exemplify their vision of sustainability, let alone make progress toward it, if they use such indexes. Motivated by the need to alleviate such symptoms of disconnection to foster movement toward sustainability, this book develops a rigorous dialog between index theory and the environmental ethics of diverse ethical worldviews and demonstrates how such a method can improve current and future indexes.

1.1 Indexes and ethics

Indexes and indicators link an ideal vision of a system with a means of measuring progress toward it, often through mathematical functions which summarize complex information about the system. Indexes are comprised of many discrete bits of data, or indicators. Some indexes also employ multiple subindexes which focus on different components of the system, each of which may be comprised of many indicators. One common index is the grade point average found on a student's report card at the end of a semester. Rather than listing grades for many homework assignments, quizzes, papers, and exams (individual indicators), the report card summarizes the student's achievement for the semester through the grades earned in individual classes (subindexes) and with the student's semester grade point average (an index). Similarly, if one wonders how well a nation, city, or company is progressing toward sustainability, it would be cumbersome and confusing to list the results of every water quality sample, name every acre of land turned into a park, record every company's quarterly earnings, and track every health statistic of its people. Rather, one would desire an overall assessment of the nation's progress toward sustainability, maybe comprised of a few subindexes that track key aspects of sustainability such as its environmental, economic, and social dimensions. Indeed, since the late 1980s, thousands of sustainability indicators and indexes have been developed for nations, states, cities, companies, nongovernmental organizations, schools, and individual households (International Institute for Sustainable Development 2012, Krank and Wallbaum 2011: 1385, Spellerberg et al. 2012).

While indicators of one sort or another have existed for millennia (e.g. Nile height measurements were used as indicators of that year's agricultural success in ancient Egypt), their use has increased dramatically in recent decades. This prioritization of assessment is illustrated in American educational reforms such as the No Child Left Behind Act with its emphasis on standardized testing, in the international and national use of Gross Domestic Product (GDP) and the Human Development Index (HDI) as measurements of a country's economy and quality of life respectively, in calls for assessment of the outcomes of science research by granting agencies, and in a host of environmental assessments.

Multiple trends contribute to the increases in index popularity. As people recognize the complex dynamic nature of the interaction between humans and the rest of ecosystems, they desire methods of understanding and summarizing these relationships. New data collection methods, aggregation techniques, and storage capacities fueled by the computer industry have made it possible to construct much more complex indexes. The modern emphasis on reductionism has led people to believe that monitoring small pieces of larger systems can yield valuable information about the whole. Simultaneously, quantitative results are typically deemed more valuable, trustworthy, or real than qualitative sources. Thus, society expects and often requires quantitative indicators to demonstrate that there is a problem or whether progress has been made toward a solution regarding ecosystems, economies, individual health, or societal functioning. Democracies also play a role in the process insofar as taxpayers and voters want to know the efficacy of programs touted by politicians and supported by their tax dollars. This desire for knowledge has spread beyond the political sphere as consumers desire information about the environmental or labor practices of a company or the energy efficiency of its products (e.g. Energy Star labels). Shareholders also desire indicators of company performance, and increasingly, sustainability.

Indeed, indexes and indicators are not merely data organizers. If used, they drive feedback loops of social learning, decision-making, and action. For example, when indexes indicate that existing actions, whether study habits or environmental policies, support one's goals, people generally continue or increase such activities. Alternatively, if students' grades indicate that they did not master the material, they may analyze what they did well and use new study strategies in the future. Similarly, if indicators reveal that pollution levels in a local lake are staying constant or rising over time, a community may enact new pollution regulations or ensure that existing laws are enforced. In all of these cases, people act to raise the index or indicator score in order to move toward their goals, whether of education or sustainability.

Indexes and indicators can, however, drive a community away from its goals if the goals and indexes are not well aligned. For instance, picture a community that values critical thinking and analytical writing but only grades students on definitions and basic facts because such exams are easier to grade. If grades are emphasized in such a community, students and teachers will probably begin focusing their time on memorization drills and test taking strategies rather than on critical thinking and writing skills. Similarly, GDP is often used as a measure of a country's economic strength, and in part because its results are so widely available, is frequently taken as a sign of the overall well-being of a nation. Yet, since GDP is tied to formal markets, it does not track many critical factors for a country's well-being including natural resources or human health. Consequently, GDP may rise if a nation's ecosystem is destroyed for a narrowly measured short-term

4 Comparative ethics for sustainability

To thoroughly incorporate ethics into indexes one must explicitly identify ethical content and methods. Yet selecting an ethical system is challenging given ethical diversity and decreasing scholarly and lay acceptance of imposing one ethical system on all people. Additionally, sustainability ethics must both be universal enough to shape transnational policies, since many sustainability issues do not stop at national borders, and align with the particular environmental situations and worldviews of local communities so they support and work toward sustainability. All too often, however, sustainability ethics or environmental ethics in general either 1) aim at universality without considering variations among local ethics, yielding ethical systems or recommendations unacceptable to many, or 2) emphasize the importance of community-based ethics to the point that they overlook the fact that dialogue between worldviews is necessary to address global sustainability issues. A pragmatic theory of ethical principles will avoid these extremes. This method, outlined below, enables diverse groups of people to have a common ground for ethics without requiring them to give up their deeply held beliefs and practices. Its ethical analysis utilizes broad ethical principles that resonate with people of many different ethical traditions and can broadly constrain what actions are deemed ethical even as the principles may be specified in different ways in various traditions. These principles are open to revision over time as new people enter the conversation, as environmental or social situations change, or as knowledge or priorities evolve.

Section 4.1 outlines this pragmatic theory of ethics. Section 4.2 identifies a preliminary set of such principles, beginning with Agenda 21's ethics and specifying them according to ethical positions of three religious and philosophical worldviews, that of James A. Nash, Christian ethicist; Othman Abd-ar-Rahman Llewellyn, an environmental planner well versed in Islamic law pertaining to the environment; and deep ecologists including Arne Naess, Richard Sylvan, and David Bennett. Readers more interested in indicators than philosophical theory may want to skip to Sections 4.1.3 and 4.2.3 to read the summaries of the theory of broad principles and the descriptions of the principles. Section 4.3 examines potential critiques of this comparison. Finally, Section 4.4 outlines a method of employing the principles.

Before proceeding with this plan, however, I will briefly respond to likely questions from environmental ethicists. First, they are likely to ask why I do not just use the principles of the Earth Charter, an international document for environmental and sustainability ethics developed through a multiyear participatory process, if I wish to focus on consensus-based principles of environmental ethics. I choose not to use the Earth Charter's ethics for three major reasons. Its general tone of eco-spirituality can be off-putting both to people who are adherents of traditional religions that are not Gaia-based and people who claim to have no religion. The method described in this chapter can address the concerns of both of these groups more thoroughly. Second, while the Charter was developed through an iterative process, it seems that its supporters have largely if not completely closed the Charter to revisions. While I understand that some periods without revisions may be necessary while building support for such a document, the fact that the Charter is not billed as potentially open to further revision is problematic. It means that people who do not agree with its tenets, tone, or methods are likely to be put off by the whole thing rather than decide that they too can contribute and participate. What if new dimensions of sustainability issues or new ethical responses are identified or developed? What of the new generations who have come of age, or been born, since the Charter conversations took place? Might they see things differently? What of the idea that idealized, static modes of thought including ethics seem to have contributed to environmental degradation in the first place as people were not able or willing to revise their thinking and actions quickly enough to anticipate or respond to new environmental issues? Doesn't the lack of a revisionary process set the Earth Charter up for similar limitations? We get ahead of ourselves if we think that current ethical documents might not be improved upon in the future as new ethical knowledge and methods develop, new conservation partners enter the dialogue or as social and environmental situations change. Additionally, considering ethics as a realm of static ideals rather than a body of knowledge and methods that change over time belies the historical record and problematically sets ethics apart from other human endeavors such as the sciences, which are widely recognized to change. Third, intellectually speaking, the Charter and supporting documents do not sufficiently articulate the philosophical mechanism by which consensus around ethical principles can arise among people of very different worldviews. Without such a discussion, I do not know the degree to which the Charter proponents expect that it will be supplemented by people of different backgrounds. My pragmatic theory, articulated in the first section of this chapter, however, addresses philosophical questions about the scope of the broad principles identified in later sections and illustrates the degree to which they can be specified in different ways by different groups while placing broad bounds on ethical actions. While the Charter might align with a similar theory, some elements of the Charter are so specific in their proscriptions as to make full alignment unlikely. Thus, I do not begin with the Earth Charter as the source for sustainability ethics.

Another question about my methods is likely to come from environmental pragmatists. Namely, if I am concerned with the practical problem of ensuring that consensus-based decision-making among people with divergent worldviews influences environmental decision-making and action through the development of sustainability indexes, why articulate ethical principles at all? Why not just focus on practical problem-solving itself, as a variety of pragmatic ethicists do, claiming that differences in ethical claims and metaphysical assumptions will only bog down discussions and detract from the real business of consensus which can be reached on many practical matters without agreement about ultimate ideals? Bryan Norton, for instance, tends to focus on problems and set aside theological and metaphysical differences with the thought that such differences do not necessarily yield different practical solutions and therefore it is unnecessary to engage with them to any significant extent when devising responses to environmental challenges (Norton 1991, Norton 2005). While I agree that people with different theological and metaphysical commitments do not necessarily make different policy decisions, I disagree that removing such commitments from the conversation altogether is productive. All too often, a pragmatic focus on the problems is accompanied by a tone of dismissal for anyone who holds longstanding or newly emerging metaphysical or religious ideas. Such a tone is not conducive to collaborative dialogue since so many people are profoundly shaped by and expect to reference their worldviews when discussing ethics. How are they to participate if their deeply held beliefs and, indeed, their selves are dismissed by those calling for the conversation? To ensure that individuals' and communities' deeply held beliefs are acknowledged and respected and can be held even as a language of collaborative sustainability ethics is developed, I articulate and implement the theory of broad principles described below. The theory behind these principles, the process of identifying them in this chapter, and the process of implementing them in the next chapter all illustrate that people can retain deeply held, contradictory beliefs, say between biocentrism and weak anthropocentrism, or whether or not a creator God exists, while forging broad principles. Explicitly naming ethical principles can also help ensure that the ethical considerations are not completely overshadowed by technical concerns.

Finally, some readers may wonder whether people with very deeply held convictions about the ground or content of their ethics will acquiesce to using the broad principles, speaking at least sometimes in a more general manner abstracted from their terminology and deeply held convictions. Addressing this question is a critical one but is more easily examined once we understand the details of the theory of broad principles and their content. For now I note that the theory of the broad principles, especially their revisionary nature, their ability to be specified in different ways in different traditions, and the fact that they set broad bounds on what decisions are ethical, but can be interpreted differently within that broad bound in local settings according to local norms, will ensure that their process and content

should be acceptable to large segments of the population. To understand these claims in more detail we must turn to the ethical theory itself.

4.1 Theory of pragmatic ethical principles

To develop a theory for sustainability ethics that can be relevant to both international policy-making and the particular ethical traditions of various local communities. I draw upon two strands of twentieth-century scholarship: 1) Robert Cummings Neville and Wesley J. Wildman's extensions of Charles Sanders Peirce's semiotic work in their development of the idea of the "vague category" and 2) Walter G. Muelder's concept of the "middle axiom." Each term brings unique resources to the project of articulating a theory of cross-cultural principles of sustainability ethics and identifying such principles. Explications of the vague category contribute philosophical precision and criteria for identifying commonalities across multiple worldviews, a helpful trait given the global arena of environmental ethics. Meanwhile, Muelder's explicit ethical work and its implementation by the World Council of Churches yield a helpful corrective to the vague category's theoretical focus through concrete examples and the emphasis on implementable and effective ethical principles. Combining and expanding these sources, and switching terminology from vague to broad, I define a broad ethical principle as one that is broad enough to be accepted by people of widely different worldviews yet can be specified in different, possibly contradictory ways according to the beliefs, practices, and environmental settings particular to each worldview. Broad ethical principles also mediate between the concrete actions of a worldview's adherents and the fundamental theological and philosophical assumptions of the worldview. Guided by criteria for application, the broad principles are guides for decision-making and action between and within worldviews. Let us look to each of these strands of twentieth-century scholarship in more detail before combining them.

4.1.1 Peirce, Neville, and vagueness

Grounding Neville and Wildman's idea of the vague category is Peirce's work on semiotics, the theory of signs, particularly the philosophical concept of vagueness (Neville 1992: 25). For Peirce, signs come in three types: icons, indexes, and symbols (Peirce 1931c: 299–300). Photographs are excellent examples of iconic signs because they, like all icons, only use their own characteristics to represent their objects. Icons represent objects that may or may not exist (a photograph of my third birthday cake still represents the cake though it was eaten years ago), but indexes require a causal relationship with the object they represent. Thus, my finger is an indexical sign when I use it to point to something, but not when it is loosely held at my side. Symbols, the third type of sign, represent their object by characteristics established in a community to relate the object and the sign's interpreter (Neville 1992: 33).

For example, the Olympic rings are symbols both of the Olympics themselves and the values of peace and competition associated with the games. Only people a part of the community related to the modern Olympics understand the meanings of the flag; it would have no meaning for people who lived before the start of the modern Olympics. Signs are central to Peirce's philosophical system because they are the means by which all thought occurs (Neville 1992: 26, 34, Peirce 1931b: 169–89).

Peirce classifies signs according to two other terms: the general and the vague. In relation to one of their aspects, each sign must be either vague, general, or somewhere in between (Peirce 1931c: 304–5). Both vague and general signs are indeterminate because they do not themselves determine their referent. The interpreter determines what a general sign refers to, while another sign fills this role for vague signs. Thus, "Man is mortal" is a general sign because it can pertain to any person specified by the interpreter while "an almanac predicting a great event this month" is vague because the almanac does not specify what great event is to occur, and another sign must be used to specify this information (Peirce 1931a: 354–57, Peirce 1931c: 299–300). Indeed, vague signs are often linked in extensive chains of specification. For example, biologists classify living entities according a series of nested signs. The kingdom of *Animalia* may be specified by the *Chordate* phylum, creatures with hollow spinal chords, which may be specified by the *Mammalia* class. Several more specifications are needed until one reaches the level of *Homo sapiens sapiens*, our subspecies. While this chain of classifications grows ever more specific, each level is still vague. No level names a particular entity and those entities the classifications represent could have different, even contradictory characteristics. For instance, *Homo sapiens sapiens* can be blind or sighted. To emphasize the fact that a vague sign encompasses many other signs, I will follow Neville's use of the term "vague category" rather than Peirce's "vague sign" though technically both the category and its constituent parts are signs (Neville 2001a, Neville 2001b, Neville 2001c).

Another major difference between vague and general categories is the degree of fixity of the relationship between their specifications. The generalness of a category implies that all of its possible specifications are united by a clearly defined relationship. For example, all triangles in Euclidian geometry (a general category) are figures composed of three straight sides in a plane whose interior angles add up to 180 degrees (Peirce 1931a: 356). The *vagueness* of a category, however, implies that its specifications are related in possibly more complex ways that can only be understood through extensive trial and error. For example, many religious studies scholars have slowly determined that "God" is not a good vague category to describe all religious traditions because of its deep relation to the claims of particular monotheistic traditions while "Ultimate Reality" or "Ultimate Realities" may be more fitting. Similarly, vague categories are not static entities articulated once but are continually open to testing and then modification or replacement (Neville and Wildman 2001c: 198).

Vague and general categories also differ by their treatment of contradictory specifications. The law of the excluded middle (that a thing can only fall into one of two contrasting categories, A or not A) does not apply to the general category itself. Consider a general category such as the idea of the triangle. It is neither isosceles nor not isosceles, neither equilateral nor not equilateral (Peirce 1931a: 356). Rather, the general category of triangle could be specified by any of these types of triangles, even though as a category it is none of them. The law, however, does apply to the specific entities in a general category: a *particular* triangle is either isosceles or not, and regardless of how it is classified in these terms, it is still a triangle. For example, a 45, 45, 90 triangle with sides 1, 1, and $\sqrt{2}$ meters or an equilateral with 3-meter sides are both specifications of the general category of a triangle. Though these specifications are different, they are not *contradictory* because both specifications could in fact be true for different triangles and fit in the general category of a triangle.

On the other hand, the principle of noncontradiction does not apply to the vague category itself nor to its specifications (Hartshorne and Weiss 1931: 5.505). To use Neville and Wildman's example, the vague concept "subjective experience of all reality" can be specified by "life is a blast" or "life is suffering." While commonsense understanding says that life cannot both be "a blast" and "suffering" each of these contradictory ideas "can meaningfully specify the vague category of the ordinary experience of life" (Neville and Wildman 2001c: 198). Thus, the main differences between the vague and general are that general categories encompass specifications identified by the interpreter that can be simultaneously true in all respects at the level of the category. In other words, they are noncontradictory. Vague categories need to be specified by other signs, possibly in contradictory ways, with relations between the specifications to be determined through time by trial and error.

Because Peirce and Neville think all thinking is done by signs, apply the concept of "vague" to a variety of ideas, (Neville 1987: 93, 100, 135, 128–31, 190, Neville 1989: 26, 54, 141, 170, Neville 1992: 67, 106–8, 206, Peirce 1931a: 347–48, Peirce 1931d: 116–18, 122–23, Peirce 1931e: 317–18, 343–45) and have written on ethics, it would not be surprising if either of these scholars had applied the concept of the vague category directly to ethics. One could imagine a discussion of vague guidelines for action such as "love your neighbor" which could be specified depending on definitions of neighbor, type of love, and the situation in which it is used. Yet neither Peirce nor Neville fully make this move. Peirce focuses his ethical discussions on the hypothetical nature of ethical theories, the relationship of ethical theory and practice, and the relation of ethics to logic and his ontological system (Feibleman 1969: 366–87). Neville does posit a connection between ethics and the idea of the vague category as he notes that moral theories that "select certain things as worthy of description" are themselves "somewhat vague" and will need to be specified by other theories closer to the

phenomena (Neville 1987: 92–94). Additionally, he maintains that cultures embody norms in their concepts and actions and that each may specify its normative rituals differently (Neville 1995). However, he only observes the possibility of vague normative categories; he does not try to identify a set of vague principles that may register the norms of multiple cultures and facilitate ethical decision-making among people of different cultures.

I posit that the vague category can be extended to principles of ethics. Vague principles are a way to conceive of the relationship between ethical principles rooted in different worldviews. The principles of each worldview, though distinct, are specifications of overarching vague principles. To flesh out and employ this theory, a method of constructing vague categories across worldviews and applying them in ethical decision-making and action is needed. The work of the Comparative Religious Ideas Project (CRIP), a project led by Neville, as well as the work of Muelder helps to fill in these holes respectively.

The CRIP sheds light on the process of using the vague categories across worldviews traditionally categorized as religious but could be useful to compare any worldviews (Neville 2001a, Neville 2001b, Neville 2001c). It aimed to state "explicitly how religious ideas differ and how they are the same, where they overlap and where they are mutually irrelevant, in what their importance lies, and what connections among them are trivial" with respect to the vague categories of the human condition, religious truth, and Ultimate Realities (Neville and Wildman 2001a: 3). These categories are vague because the individual religious traditions specify the categories in different, yet possibly contradictory ways (Neville 2001c: xxiv). For example, Ultimate Realities can be specified by definitions of the Ultimate in ontological terms, as in Hinduism's idea of "Nārāyaṇa as the creator of the world on which all else depends," Judaism's portrayal of its God as "the creator of the world and goal of human existence," and the "Confucian notion of Heaven." Ultimate Realities can also be specified by anthropological ultimates that define what is ultimate in relation to humanity's needs or desires (Neville and Wildman 2001b: 1). For example, utilitarianism's is the greatest good for the greatest number. Thus, the vague category of Ultimate Realities is specified with other vague categories, anthropological and ontological ultimates, each of which can be specified in highly divergent ways.

CRIP scholars acknowledge that comparing ideas as complex as religious ideas using vague categories is a difficult process easily prone to distortion by the biases of the one doing the comparison so they articulate a theory of careful comparison criteria to evaluate the results of such comparisons. They maintain that entities to be compared must be understood on their own terms and as they influence ideas and actions both inside of and outside of their semiotic systems. Though entities can be compared in all of these ways, rigorous comparisons should also acknowledge that there is a sense in which ideas themselves cannot be compared because of the limits of translation from one worldview to another. Once comparisons are made, they need to be evaluated for rigor and significance. This is usually done through pragmatic

test rather than those of formal logic and using relative criteria including "consistency, coherence, applicability to the subject matter, and adequacy" (Neville and Wildman 2001c: 189). If the comparisons are inadequate, they should be amended as needed (Neville and Wildman 2001c: 190–91).

Through the process of comparison between the specifications of the vague categories, the participants in the CRIP, and those who now read about the project, are both able to refine the vague categories and gain a deeper understanding of the important connections and discontinuities between religious traditions (Neville 2001a: xvii–xxii, Neville and Wildman 2001c: 187–88). This method balances the desire for universal concepts with the respect for the particularities of each tradition, exactly what we are looking for in a theory of sustainability ethics. Yet, this comparative method and the idea of vagueness need to be modified to apply to ethical issues which require applicability in practice.

4.1.2 Muelder and middle axioms

To translate the theory of vague categories to the needs of applied ethics the work of Walter Muelder (1907–2004), a Christian social ethicist and theologian concerned with ecumenism and the application of ethical theories to real life decision-making through the concept of a "middle axiom," will be helpful even if we do not share his theological commitments. For Muelder, ethics consists of "ultimate ideal goods," "the concrete programs of ethical commands," and the significant practical and logical gap between the two which can be bridged by his concept of "middle axioms" (Muelder 1966: 10). According to Muelder, ideals consist of moral laws which are universal in the sense that they apply to nearly all situations unless superseded by a more general law (Muelder 1966: 17). For Muelder, moral laws include "The Law of Specification: all persons ought, in any given situation, to develop the value or values specifically relevant to that situation" (Brightman 1933: 171, Muelder 1966: 52); "The Law of Cooperation: All persons ought as far as possible to co-operate with other persons in the production and enjoyment of shared values"; and the Metaphysical Law: "All persons ought to seek to know the source and significance of the harmony and universality of these laws, i.e., of the coherence of the moral order" (Muelder 1966: 60). Muelder holds that moral laws provide structures for ethical decision-making but do not uniquely determine the outcome of any ethical decision since they are ideals removed from the details of actually making decisions (Muelder 1966: 10, Muelder 1983: 286). Critical details which influence human actions such as who or what is involved, who or what will be harmed, who has the power to make a decision or act, and the history of the situation will always be separated from ideals as are the facts that we cannot fully know, desire, or achieve our ideals due to human fallibility (Deats 1986: 285).

Muelder uses "middle axioms," a term coined by J. H. Odham, to bridge the gap between ideals and concrete actions. Middle axioms inhabit broad

bounds set by moral laws though laws do not uniquely determine their content (Muelder 1959: 21, Muelder 1966: 10, Preston 1986). Though middle axioms do not determine a single correct act for any circumstance, they do constrain the bounds of acceptable actions much more than moral laws.

Muelder's primary example of a middle axiom is the "responsible society." It was developed in 1948 when the World Council of Churches (WCC) sought an economic "standard ... relevant to the needs of their members" both in communist and capitalist societies (Wogaman 1993: 257). Muelder follows the WCC's definition of the "responsible society" as "one where freedom is the freedom of men [sic] who acknowledge responsibility to justice and public order, and where those who hold political authority or economic power are responsible for its exercise to God and the people whose welfare is affected by it" (Muelder 1959: 19). In a responsible society all people should be treated as ends, not means, by states and economies since these institutions are created to serve people. The

> responsible society also emphasizes freedom, justice, and equality, mandating that people have freedom to control, to criticize and to change their governments; that power be made responsible by law and tradition and be distributed as widely as possible through the whole community; and that economic justice and equality of opportunities be established for all members of society.
>
> (Muelder 1959: 19)

Muelder refined the nature of the "responsible society" in *Foundations of the Responsible Society*. After articulating the general characteristics of a responsible society, including equality, freedom, and justice, he outlined the implications of a responsible society with respect to economics, farming, social welfare, and other spheres of human life. Yet, as befits a middle axiom, Muelder posited general priorities that make up the responsible society rather than definite prescriptions for social policies. For example, in his section on responsible consumption, Muelder favored using "qualitative rather than predominantly quantitative standards" because he thought that quantitative measures usually monitor how much we consume without considering whether this level of consumption is just or equitable (Muelder 1959: 242). Thus we see that Muelder's description of the responsible society is more concrete than moral laws because it identifies ways that the laws may be followed in concrete actions even though it is not specific enough to uniquely determine ethical actions.

Because middle axioms highlight common features of moral systems that may have contradictory specifications, they can be classified as vague categories for ethical guidelines. Admittedly, Muelder did not ground his ideas in semiotics, work out detailed theories of how we develop middle axioms, or discuss how they relate to each other in as much detail as Neville and Wildman do. His use of middle axioms does, however, reveal two key

modifications of the theory of the vague categories particularly useful for ethics.

First, Muelder's work emphasizes a more intricate picture of the relationship of levels of middle axioms than is typically discussed with respect to the vague categories. As you may recall, each vague category can be specified by multiple categories, each of which can have multiple categories specifying it. At each level, the categories may have contradictory characteristics and yet equally specify the category vaguer than it. To specify one of these categories, we must choose *one* specification at each level, as an animal belongs to one kingdom, one phylum, one class, one order, one genus, and one species. Similarly, Muelder posits that "there may be several levels of generalization or abstraction in this middle range of moral propositions [the middle axioms]," though his examples reveal a more complex relationship than a simple hierarchy (Muelder 1966: 10). For instance, Muelder names justice, equality, and freedom as the components of the responsible society (Muelder 1966: 33). These three components, possibly middle axioms themselves, are mutually dependent on each other and together are needed to specify the responsible society. Thus, he maintains that two people implementing the middle axiom of the responsible society in different cultural contexts will each do so through justice, equality, and freedom though their definitions of these terms may vary. The way they define each term will shape their definitions of the others and of their vision of the responsible society as a whole.

Recognizing the complex interrelationship of vague principles of ethics and their specifications highlights two important characteristics of using vague principles in ethics. First, it provides a framework for discussing the points of consensus and disagreement between worldviews. Second, it enables us to acknowledge that ethical principles at any one level of abstraction may be intertwined, as often occurs. Thus, ethical categories, axioms, or principles ought not to be applied in isolation if one aims to apply them in ways consistent with actual practice.

Muelder's focus on applied ethical decision-making also necessitates adding the criteria of tractability to the criteria of comparison (consistency, coherence, applicability to the subject matter, and adequacy) articulated by Neville and Wildman (Neville and Wildman 2001c: 189). They are focused on faithfully representing the traditions under study. Muelder's goal, of course, is to develop and encourage the use of the responsible society and other middle axioms to establish ethical norms appropriate in multiple traditions to guide decision-making. Indeed, a significant portion of *Foundations of a Responsible Society* is devoted to demonstrating how the middle axiom of the responsible society can shape decision-making. Here Muelder follows a criterion of tractability which prioritizes middle axioms that can helpfully guide decision-making – those that are related to the world in which decisions need to be made, resonate with moral traditions, and productively constrain actions. Similarly, as we seek ethical principles that can guide sustainability

discussions and actions we must strive for tractability in any vague ethical category we articulate. Combining Muelder's insights with the well-articulated concept of the vague category yields a theory of broad ethical principles that can promote ethical dialogue across worldviews.

4.1.3 Broad principles for ethics: combining insights of vague categories and middle axioms

I define a "broad principle" for ethics as a guideline that mediates between ideals and concrete reality and is broad enough that it can be specified in different, possibly contradictory ways depending on the details of the situation in which it is used. Such broad principles can only be identified through a careful process of comparison in which people within and outside of the traditions test the proposed broad category against the traditions it supposedly registers and for tractability. After broad principles are articulated, they can be applied as an interconnected set to guide consensus-based moral action across multiple worldviews. My choice of the term "broad principle" to unite the rich heritage of the middle axiom and vague category is quite deliberate.

I choose "broad" instead of "vague" to ensure that readers, especially those not familiar with this philosophical tradition, do not focus so much on the pejorative connotations of "vague" that they cannot appreciate its utility when describing a category of ethical principles. The ethical principles are not so vague that they inhibit meaningful ethical analysis. Examples of their application in Chapter 5 will help overcome such presuppositions, but using a term other than "vague" may help a reader get to these examples. I do note, however, that the negative implications of vague is *appropriate* in a philosophical context if applied to a group of ethical principles that are not similar in a meaningful way (Neville 1992: 146, 198–99); this caution can be incorporated into the definition of a "broad principle" without using the term "vague" which is likely to be dismissed out of hand by a mixed audience of ethicists, index developers, and stakeholders.

With the choice of the term "broad" I also deliberately distance myself from those who, drawing on the terminology of "thick" and "thin" descriptions in anthropology use thick and thin to describe ethics, where "thin" is used in parallel with broad and thick is used for the specifications. I've never been fond of these terms for ethical categories as discussed here because "thick" is not as able to connote an overarching, encompassing, umbrella category that links various specifications with common themes as "broad" can.

I choose the term "broad principle" rather than "broad axiom" because "principle" avoids the universal, self-evident connotation that is often implied by and assumed of "axiom" (though Muelder does not use it in this way) (Bennett 1946: 77). After all, it is only after careful consideration that a principle can be considered broad with respect to specific characteristics of multiple worldviews. To even more assuredly avoid the static certainty of

"axiom" I could use "guideline" instead of principle. Guidelines are considered as more suggestions than rules; they are often understood to change over time as new information is obtained or new situations develop. I do not use the term "guidelines," however, because the principles I have in mind are not as easily set aside as guidelines. While they may be modified and some may even be jettisoned, this only occurs after careful comparison within particular traditions or in collaborative decision-making that leads to the broad principles.

"Principles" are advantageous for cross-cultural environmental conversations because they are often articulated in such a way that they reference the particular values and metaphysical assumptions of a worldview hut do so in language that is more readily communicable to outsiders than the ethical stories, tales of moral heroes and assumptions themselves. Thus, focusing on principles, however formulated in individual traditions, can be a first significant step toward rich comparisons and the formulation of broad ethical principles. In particular, broad principles establish a moral language useful to people of different moral worldviews. If used, such a language will not only foster communication among diverse worldviews, but will also enable morally acceptable decision-making about environmental issues in ethically heterogeneous groups as is necessary to address regional and global dimensions of environmental problems.

Despite these advantages, the use of principles can risk imposing the ideals of the powerful on others, losing the particularities of the tradition from which they arose, and reducing rich ethical principles to bland and powerless common denominators. Several strategies including a careful process of comparison by a diverse group of participants who leave the principles open to revision over time help avoid these dangers.

Neville and Wildman's guidelines for establishing categories of comparison, with a few additions, are useful to guide the process of comparison. They assert that each entity to be compared must be understood on its own terms, and as it influences other ideas and actions, both inside of and outside of its semiotic systems (a group of interrelated signs) (Neville and Wildman 2001c: 202–3). Such criteria can help ensure that the broad principles do register important elements of the various worldviews, a necessary step if the broad principles are to be technically sound and ethically resonate with people of multiple ethical systems. Additionally, as we saw in Muelder's work on ethics, each ethical principle must be tractable for environmental decision-making; each one must help people discriminate between options during decision-making and action, either on its own or in combination with other principles. Ethical principles must also be capable of making recommendations that are implementable in particular cultures and environments. For example, a broad principle regarding resource use would need to resonate with both 1) the idea of "eco-kosher" proposed by Arthur Waskow in which Jews connect all consumption, not just eating, with the holy, and which consists of "constantly moving standard[s]" challenging people to damage the earth less

than they did previously (Waskow 2003: 313), and 2) secular initiatives promoting energy conservation such as tax rebates for purchasing energy-efficient appliances, the marketing for which usually focuses on the amount of money consumers will save by reducing energy use.

Additionally, the process of identifying principles should be a collaboration among people who are experts in different worldviews to ensure that their distinct features are well represented. If that cannot occur, as in this single-authored project, care should be taken to examine multiple positions that are different enough to bring challenges to the comparison yet to which the author can do justice. While a single-authored comparison has its limits it does enable the comparative process to be modeled and, of course, its results are open to revision over time. Openness to revision is important if one person or many people are trying to articulate a preliminary set of broad principles. Changes may be necessary as new worldview partners enter the comparison, as new scientific or normative knowledge is gained, and as social conditions and broader ecosystems change. Reviseability also guards against the problems of imposing ethics on others. Indeed, if the principles are understood to reside between concrete decisions and ideals then it makes no sense to put them on a pedestal or force them upon others. At most they can be recommended.

This process enables the identification of broad principles that mediate between ideals and actions and register important elements of multiple ethical systems while preserving their unique interpretations. The broad principles allow individuals to collaborate without becoming hopelessly mired in disagreements over which foundation is best or correct, just what is needed for sustainability ethics.

4.2 Ethical systems

With a theory of broad principles it is now possible to identify a preliminary set of broad principles, the next step toward incorporating ethics into sustainability indexes. Since our goal is a set of principles which reflect normative priorities of the sustainability movement that can be specified by participants from multiple worldviews so that widespread consensus about general normative bounds for sustainability and sustainability indexes can be reached while enabling people to adhere to their longstanding and deeply held worldviews, drawing upon ethical systems widely used in practice will yield principles most conducive to collaborative decision-making. Thus, I begin this comparison with the ethical principles embedded in Agenda 21 (farsightedness, adequate assessment of the situation, adaptability, cooperation, efficiency, responsibility, and equity). After all, it was constructed through a broadly participatory process and, unlike the Rio Declaration and Earth Charter, has been quite influential on index development. Yet, I do not stop with the principles in Agenda 21 because they are not necessarily developed enough to be implementable and because they are not necessarily

broad enough to encompass multiple normative perspectives for sustainability. Comparing the principles of Agenda 21 with that of multiple traditions will yield a set of broad principles. In theory, such a comparison should include all operating worldviews and ethical systems. In practice, however, such an extensive comparison would take up multiple volumes, and put off the study of how ethics can be interwoven with technical concerns in the evaluation and construction of sustainability indexes, the main goal of this project. Thus, I selected several ethical systems for comparison which differ according to ethical method and worldview, recognizing that many others could have been involved in this comparison and should be in the future.

The ethical systems chosen all explicitly articulate ethical principles and balance attention to the environmental situation with a commitment to philosophical and theological positions but come from different worldviews, both secular and from "traditional" religions, and use different methods of reasoning, authorities, and presuppositions. These systems include that of James A. Nash, a Christian environmental ethicist who developed ecological virtues from a study of Christian love using a modified natural law theory that takes reason, embodiment, and the natural and social sciences seriously; the work of Othman Abd-ar-Rahman Llewellyn, a scholar of Islamic law who draws upon its traditional sources and methods as well as specific examples of positive law to characterize methods and guidelines of Islamic environmental law; and the work of deep ecologists including Arne Naess, and Richard Sylvan and David Bennett, philosophers who contributed to the development of deep ecology, an environmental worldview focused on the intrinsic value of all biota and intuitions or feelings of the environment, often coupled with rationality, which has been influential for and resonant in a number of environmental groups including Earth First! (Kamieniecki et al. 1995: 315, Sylvan and Bennett 1994: 145, Taylor 1995: 15–16).

To ground the comparison of these systems to identify the preliminary broad principles, Section 4.2.1 provides a brief background to the ethical systems of Nash, Llewellyn, and deep ecology. With this foundation laid, Section 4.2.2 undertakes a rigorous comparison, broadening Agenda 21's responsibility, farsightedness, adequate assessment of the data, and adaptability; replacing Agenda 21's equity with justice and efficiency with careful use; subsuming cooperation under adequate assessment of the situation and identifying a new principle, feasible idealism. Section 4.2.3 summarizes the results of this comparison in a working list of the principles.

4.2.1 Introduction to the ethical systems

Since a rigorous comparison to identify broad principles requires attention to the similarities between worldviews and the ways in which they are distinct, a brief introduction to the methods and content of the ethics of Nash, Llewellyn, and deep ecologists will set the stage for the comparison in later sections.

While one might expect that a Christian environmental ethicist would look to the Bible, and more broadly look to the Christian tradition as ethical sources, Nash maintains that the Christian tradition, particularly the Bible, has few unambiguously positive portrayals of or positions toward nature. Thus, while he relies on the Bible to some degree, and traditional theological concepts including sin, love, salvation, and incarnation to a greater extent, he also utilizes natural law theory and scientific data to reformulate Christian ethics in light of contemporary ecological problems (Nash 1991, Nash 2000: 227–28). Traditional natural law theory utilizes reason to identify ethics; Nash modifies the natural law tradition to reflect human and biotic conditions and draw upon insights of natural and social sciences rather than focusing on "pure" rationality as traditional natural law tends to do. In this way, he hopes to partially transcend "arbitrary preferences" (Nash 2000: 231, 233–35) and develop virtues that could be identified by and meaningful for all people, though he focuses on Christians. For example, Nash relies on knowledge of many physical and natural sciences as he explores the ethical challenges of pollution, global warming, ozone depletion, population explosions, species extinctions, and genetic engineering. He also looks to the social sciences for the causes and effects of human population explosions and increasing consumption, as well as the intricate connections between economics, ecology, and politics (Nash 1989: 32–33, Nash 1991: 23–67, Nash 1992: 774, Nash 1994: 140–44, Nash 1995, Nash 1996, Nash 2000: 225, 243–46, Nash 2001). Drawing from these sources, he articulates nine ecological virtues (sustainability, adaptability, relationality, equity, frugality, solidarity, biodiversity/bioresponsibility, sufficiency, and humility) that form the basis of his environmental ethic (Nash 1991: 63–67, Nash 1996: 9).

Othman Abd-ar-Rahman Llewellyn, an environmental planner well versed in Islamic law pertaining to the environment, also aims to expand his tradition's ethical schema to better respond to environmental crises. Llewellyn, however, thinks that Islam has a number of resources for environmentalism. He draws upon *Qur'an* and *ḥadīth*, stories and sayings of the Prophet which are authoritative in Islamic law. He also relies upon the revitalization of legal methods including *ijtihād*, an ancient practice of reasoning from legal precedence and the case at hand to arrive at answers to novel problems, to extend traditional Islamic norms to contemporary environmental issues (Llewellyn 1984: 29, Llewellyn 2003: 193). Llewellyn advocates a return to the "ultimate purposes or objectives of the *Shari'a*" to construct environmental norms (Llewellyn 1984). With this method he aims to avoid both the problems of traditionalists who strictly apply ancient principles about conservation to contemporary situations even though today's problems differ in scale, and possibly, in kind, from ancient concerns, and the problems of reformists who tend to pick and choose environmentally friendly laws from any of the traditional schools of law without articulating a coherent approach (Hallaq 1995a: 207–54). Llewellyn strives to split the difference by following a long history of Muslim jurists who claim that "the fundamental purpose of the

Shari'a is the welfare (*maṣlaḥa*) of Allah's creatures" (Llewellyn 1984: 29, Llewellyn 1992: 89). To discern how to live out the *Shari'a* he relies on traditional Islamic legal instruments (e.g. *waqf*, *ḥimā*, and *ḥarām*), methods (e.g. *ijtihād*), and specific laws as well as contemporary knowledge about the state of the environment (Llewellyn 1984: 29, Llewellyn 2003: 193). Developing Islamic environmental law does face significant challenges including the need to reestablish the use of Islamic law; determining its relationship to secular legal systems and knowledge; constructing the laws; and educating people about and enforcing such laws (Coulson 2003: 47, Haq 2003: 128, Llewellyn 2003: 236, Nasr 1993, Nasr 1996, Nasr 2000). Despite these challenges, many Islamic scholars agree that Muslims must focus on environmental law to have an appropriate Muslim response to growing environmental concerns since Islamic law is the seat of morality in Islam (Haq 2003: 142–50, Llewellyn 1984, Llewellyn 2003).

Contrasting with Nash and Llewellyn who develop new responses to environmental issues while firmly rooted in particular, long-established religious traditions, is deep ecology, a worldview articulated by Arne Naess, a Norwegian philosopher, and has been clarified and extended by other philosophers including Richard Sylvan and David Bennett. While there are many theories of environmental ethics detached from particular longstanding religious traditions, I chose deep ecology for comparison in this study because it has been influential on environmental movements to a larger degree than many of the more abstract theories. Ethical theories that actually matter to people must be discussed when developing sustainability policies and indexes so indexes align with sustainability goals and are accepted and subsequently supported by everyday people. Deep ecology also provides diversity for the comparison as it is a newly emerging position and because its focus on intuiting how to live in relation to the world differs considerably from Nash's and Llewellyn's methods.

Deep ecologists focus on the intrinsic value and interdependence of all entities and how human intuition or feelings of these characteristics of nature shape both human actions and selves. Sylvan and Bennett follow the basic platform of deep ecology but aim to clarify it by rejecting several of Naess' ideas to increase their system's logical consistency and applicability. Specifically, they maintain that certain morally relevant traits correspond to a higher level of moral concern; entities with the same morally relevant traits are to be treated similarly regardless of species (Sylvan and Bennett 1994: 137–41) rather than Naess' idea of biospheric egalitarianism.

Deep ecologists take a variety of positions with respect to modern science. They are often wary of it because of its role in environmental destruction through the application of technology, but recognize that it can inform their assessment of the situation. Deep ecologists also rely on their intuition (Naess) or feeling (Sylvan and Bennett) of the valuing of nature, which in Sylvan and Bennett's case is developed through rationalistic analysis to yield their conclusions. This direct experience of the value of nature is quite

influential for deep ecology, and is certainly much more prevalent in deep ecology than in Nash's and Llewellyn's work.

Thus, these three ethical systems vary with respect to their links to traditional worldviews, from reapplying traditional themes and methods to new circumstances (Llewellyn) to creating new virtues and modifying old ones as inspired by the combination of ancient theology and contemporary theology and science (Nash), to developing a new worldview and ethical guidelines (Sylvan and Bennett). They also differ with respect to their sources for ethics as they use some combination of reasoning, Christian and Muslim theological traditions, Islamic law, contemporary science, and intuitions. Additionally, the content of their ethical claims, as discussed below, focuses on different aspects of environmental and sustainability issues. Nash places emphasis on Christian love and knowledge from the contemporary sciences; Llewellyn on revitalizing the methods of traditional Islamic law to fit contemporary environmental contexts; and the deep ecologists on identifying intrinsic value through intuition or reasoning. All of these differences make the three systems a good set to compare when seeking to develop broad principles of ethics as they collectively provoke revisions of the preliminary broad principles from Agenda 21 and represent significantly diverse positions. Before undertaking this comparison, however, we should know something more about the content of each system of ethics.

Nash relies on two primary sources as he develops his nine virtues for environmental ethics: Christian theology centered on the concept of love, and a study of actions necessary to promote ecological integrity in today's world drawing upon natural law ethics, scientific knowledge, and embodied experience. He names love the unifying and motivating theme of all Christian theology, ethical reflection, and action. Love is central for Christianity, asserts Nash, because Christians believe that God is love, a claim emphasized by the prominence of love in the gospels and that "the process of creation is itself an act of love. All creatures, human and otherkind and their habitats are not only gifts of love but also products of love and recipients of ongoing love. Everything then has value imparted by the Source of Value" (Nash 1991: 140–41). Adding support to this idea is the belief that "the story of God's love provides the 'basic moral standard', the 'pattern and prototype', for Christian ethics" (Nash 1991: 141). Thus, while Nash relies on many Christian theological concepts to develop his environmental ethics, he classifies all of these doctrines as expressions of love. For Nash, Christian love

> is always at least caring and careful service, self-giving and other-regarding outreach, in response to the needs of others (humans and otherkind), out of respect for their God-endowed intrinsic value and in loyal response to the God who is love and who loves all. It seeks the other's good or well-being and, therefore, is always other-regarding (only the degree is up for debate).
>
> (Nash 1991: 145)

Thus Nash thinks that love entails recognizing the value of all others on their own terms, because God created them (Nash 1991: 107, 153–54), as well as doing good and avoiding harm, "on behalf of the well-being of others, human and otherkind, simply because a need exists" (Nash 1991: 153). In order to love appropriately Nash claims that humans must know of the needs of our loved ones, both "cognitive[ly] and emotional[ly]" (Nash 1991: 157) and through humility, recognize what knowledge and character one has, may have and can not possibly have (Nash 1991: 63, 66, 156–57). Human limits should also be recognized according to Nash's vision of love so people recognize that the world apart from and including humanity is necessary for our "physical existence, but also for our spiritual well-being" (Nash 1991: 155). Beyond these dimensions of love is communion, the desire for others to be "our loved ones in fully reconciled relationships" (Nash 1991: 157). Such communion, is, however, not complete in history according to Nash; it will only be fulfilled in "The Reign of God" which is the "consummation of communion or reconciliation" (Nash 1991: 160).

While all of the dimensions of love named above are important, the final dimension, justice, is the most important for Nash. Because justice is central to Jesus' message and the Bible as a whole, Nash argues that it is a moral imperative for all who find the Bible normative. It is a minimal expression of love; fully loving inspires much more than justice, but necessitates at least justice. He examines biblical portrayals of God as the "lover of justice"; mandates for justice in both testaments, including the special considerations given to widows and orphans as a part of the relationships promised in biblical covenants; and Jesus' vision of the Reign of God (Nash 1991: 163–65) concluding that justice must focus on the weakest whose rights are easily abused. He sees no reason why justice cannot be extended to all creatures, particularly since the Noachian covenant established that otherkind are included in God's concept of right relationship (Nash 1991: 165–66). Indeed, Nash claims that identifying the proper application of justice to all life is one of the primary tasks of an environmental ethic (Nash 1991: 166–68).

Nash focuses on distributive justice, "the proper apportionment, or allocation of relational benefits and burdens," because it is applicable to all entities, unlike communicative justice (Nash 1991: 164–66). Justice, for Nash, can only be determined within the parameters of a particular situation because justice involves making sure that each entity is given its due, a process of identifying and balancing rights of all involved parties, something that cannot be determined in the abstract. Despite emphasizing the importance of *human* environmental rights, Nash maintains that such focus is insignificant because it does not adequately recognize the value of all entities and will not work quickly or effectively enough to solve environmental crises, especially if economic and environmental considerations conflict (Nash 1991: 172). Thus, Nash extends justice and eight basic rights to all entities with "conation – a striving to be and to do" because "beings may be said to have 'interests' in their biological roles *for their own sakes*" (Nash 1991: 178, 154–55, 186–88,

Nash 1993: 147–48). He is careful to point out that humans have many rights above and beyond this most basic list, that there is no logical reason (though there may be a psychological reason) why biotic rights should diminish human rights, and that entities should be treated the same only when they have similar morally relevant characteristics. Thus he does not worry about "voting rights for chimpanzees – let alone fair housing rights for parasites in human bodies" (Nash 1991: 174). By naming biotic rights and their limits Nash articulates the minimal bounds of just living – responsibility for ensuring that the rights of humans and otherkind are protected – and preserving necessary conditions for living a life of love (Nash 1991: 167–68).

While Nash's discussions of justice can get fairly specific, he recognizes that most of his analysis of the dimensions of love are still so abstract that they do not readily aid decision-making and action in the complex real world. In Muelder's terms, he needs some middle axioms to link the ideals of love to everyday life. To do this, Nash articulates nine ecological virtues (e.g. adaptability, equity, frugality, humility) that resonate with the dimensions of Christian love and can guide action (Nash 1991: 197–221). Each of these virtues is a mean between extremes which, when practiced over time, can shape and become a part of one's character.

Though Nash, like many in Euro-American worldviews and legal systems, separates ethics from the law, Islamic traditions integrate ethical principles, religious rules, and laws about matters as diverse as property, international affairs, and marriage (Llewellyn 2003: 186–87, Schacht 1982: 1). Indeed, if one wants a guide of how to live in Islam, one must look to Islamic law, rather than some discipline called ethics. Thus, it is not surprising that Llewellyn's work to develop an Islamic position on acting in and toward the environment differs methodologically from Nash's environmental ethic though they share many priorities, emphasize the use of modern science, and yield several similar environmental ideas. To understand Llewellyn's position, let us briefly examine foundational beliefs of Islam, theories of Islamic law, and particular methods, principles, and laws deemed helpful for environmental ethics.

At the foundation of the Islamic faith is the concept of *tawḥīd*, or unity. As an attribute of God, *tawḥīd* connotes the oneness of God. For Muslims, God is the sole and ultimate authority and owner of all of creation; God has created all creatures in a perfect balance so that all may be sustained through their relationships with each other (Kettani 1984: 67). Through these relationships every being fulfills its God-given role to sustain others and worship and serve God (Llewellyn 1992: 89). Consequently, Llewellyn claims that "All beings are ... united in aim, and benefiting the whole is a value that pervades the universe" (Llewellyn 1984: 29–30). Indeed, some claim that the central aim of Islamic law is acting to ensure "the universal common good of all created beings, both in this life and the life after death" in order "to preserve the welfare of Allah's creatures" (Llewellyn 1984: 29, Llewellyn 1992: 89).

Although all creatures are believed to be united by God's order, Islam holds that humans have a special role in the world assigned by God: to be

khalīfa, a vice-regent or steward. Each human is a *khilāfa* because of his or her "enormous ability to do both good and evil; with ability comes responsibility" (Llewellyn 2003: 190). As a *khilāfa*, Llewellyn argues that a Muslim must uphold "the maxim 'There shall be no injury and no mutual infliction of injury' which protects a person from injury and prohibits him from causing injury to his neighbor, to society or to the creation as a whole," "one of the most important universal principles found in *ḥadīth*," (Llewellyn 1984: 33). Thus, humans are to maintain and care for creation, and, where possible, improve it (Chishti 2003: 75, Clarke 2003: 97).

Through their role as *khilāfa*, Muslims are to embody the ideals of "do no injury" and prioritize actions that will bring the greatest overall good to creation. To aid the decision-making process, Islamic jurists have developed several other ideals: the good of an action should outweigh the harm that results from it, universal needs trump individual needs, more significant needs should be prioritized over lesser needs, and people with less power needs should be prioritized over lesser needs, and people with less power deserve special consideration. In Islamic law, these ideals have been most fully developed in the realm of social justice. For instance, an ancient law to promote social justice mandates that the poor be able to collect grain missed by the harvesters and prohibits harvesting methods that prevent the needy from getting their share of the crops (Llewellyn 1984: 33). Certainly, this law would ensure that a greater number of people had access to food, a significant requirement of social justice.

Islamic environmental law often works for social justice to maintain continuity with traditional Islamic law. Indeed, Islamic environmental scholars have already begun to study issues which link social and environmental justice including population control, women's rights, vegetarianism, and prohibitions against waste and pollution (Ammar 1995, Foltz 2003, Hamed 2003, Majeed 2003). In these studies, traditional laws, such as those about gleaning, would need to be revised for application today if the intent of ancient laws will be maintained given the recent changes in social structures, industrialization, knowledge and environmental conditions. For instance, the needy may be far distant from grain production centers.

To understand how these new issues are raised in an Islamic context, we must understand something more about the *Shari'a*, Islamic sacred law, which not only denotes the laws themselves but also connotes "the Way, the path to water, the source of life" (Llewellyn 2003: 187). Muslims believe that by following the law they "live life ... in the most moral and ethical way" according to God's will (Llewellyn 2003: 187). For Muslims, acting ethically is not a trivial matter; their actions may have serious positive or negative consequences both in this world and in the next.

Muslims believe that the ultimate reason to obey the law is God's will. All authority to legislate in Islamic law comes from God. God's will is most powerfully revealed in the *Qur'an* and *ḥadīth*, collections of sayings and actions of the Prophet (and Imams for *Shi'is*). However, Muslims generally believe that the *Qur'an* and *ḥadīth* need to be interpreted to determine

exactly what is to be done in every situation. Islamic law developed as Muslims asked *mujitahid*, jurists, how to act in particular situations. They elaborated upon the *Qur'an* and *Sunna* by referring to *ijmā*, the consensus of other jurists, and using *ijtihād*, the hard work of reasoning to determine the law. *Ijtihād* included reasoning to a solution for a novel case from analogies with old ones (*qiyās*), and "judging according to the hierarchy of Islamic values by preferring the stronger or universal values over the weaker or instrumental values (*istihsan*) and where there is no precedent, making judgments on the basis of public welfare (*al-musahh*)." *Shi'is* replaced analogy with reason, *'aql*. (Hallaq 1995a: 1, Llewellyn 1984: 37, Schacht 1982: 1, Weiss 1998: 112, 114, 122).

As Islamic jurists worked to determine God's will in and for the law by relying on the four sources (*Qur'an*, *Sunna*, *ijmā*, and *ijtihād*), various factors led to multiple interpretations of the law. Individual jurists emphasized different portions of the sources of law and used their own reasoning, which certainly differed from person to person. Conventions of local cultures, including class-consciousness, views about women, and the willingness to learn from foreign legal systems also contributed to legal divergence (Coulson 2003: 48–50). From the 1300s, four schools dominated Islamic law: Hanbali, Maliki, Shafi'i, and Hanafi. While all agreed that the *Qur'an* and the *ḥadīth* were the most authoritative sources of law, they emphasized different *hadīth* and components of *ijtihād* (Coulson 2003: 71–73). Sometimes these differences led to contrasting laws about a particular subject such as developing "virgin" land. Hanafi jurists required land developers to have permission from the local authorities; Maliki jurists required such permission only when the development may harm public welfare; Shafi'i jurists did not require permission at all (Haq 2003: 200–1). Additionally, sometimes one school focused more than others on a particular topic, as when the Maliki school developed the most detailed laws about *ḥimā*, traditional areas of land preservation (Haq 2003: 128, 144).

Though significant variations in the theory and practice of Islamic law exist, several factors avoided fragmentation of Islamic communities along legal lines. First, jurists worked from the same general sources and agreed upon major tenets of the faith such as the five pillars of Islam. Second, when Islamic law was regularly and fully practiced, the majority of Muslims believed that the diversity of opinions in Islamic laws should not merely be tolerated but rather embraced as a sign of divine blessing (Weiss 1998: 116). Third, the dominant theory of consensus helped connect the Islamic community. Bernard G. Weiss describes this majority view as the belief that God intended a particular correct interpretation of the law but that fallible humans were likely to disagree on its content. Supporting this belief is the Muslim adage that God will give jurists a double reward if they are correct and a single reward if they are wrong. Where differences of opinion existed despite a full examination of the sources, the majority believed it was impossible to determine "which opinion, if any, was correct" (Weiss 1998: 119).

Thus, while jurists regarded their authority as deriving from God's, they also usually acknowledged the distinction between their interpretations and God's intended law (Weiss 1998: 120). This division between the ideal law and the law as discernable to humans enabled Muslims to tolerate significant amounts of legal variation. To a contemporary, nonMuslim ear, it may sound as if Islamic law could be stretched to an extreme form of relativism where any interpretation could be acceptable. Yet the shared adherence to sources of law, methods of interpretation, views of consensus, as well as the practical structure of the schools restricted possible interpretations of Islamic law and addressed questions of divergent legal opinions.

In addition to the permissible and even encouraged diversity within Islamic law, the law, especially for those schools that emphasized *ijtihād*, was also quite dynamic in its ability to adapt to new situations while remaining faithful both to traditional beliefs and specific positive laws. Though Islamic legal scholars in approximately 900 CE declared that the "gates of *ijtihād* were closed" implying that all necessary legal decisions had already been determined, recent scholarship suggests that *ijtihād* has always been a part of Islamic law even if less prevalent than before (Hallaq 1995b: 3). This flexibility along with specific ancient laws about social justice, charitable trusts, waste, land use, and water rights could enable Islamic law to directly address contemporary environmental challenges by extending ancient laws to analogous contemporary situations (Haq 2003: 144, Llewellyn 2003: 208, 210).

Though centuries old, widely recognized worldviews such as Christianity and Islam can certainly influence present-day ethical actions and policy-making expectations for sustainability, so too can relatively new worldviews with a relatively small number of adherents. While there are many such worldviews developed in theory or practice, here I look at the deep ecology movement which has both an academic component and a following in the wider world.

In the early 1970s Arne Naess, a Norwegian philosopher, introduced the terms "shallow" and "deep ecology," to denote ways in which people relate to the environment based on their intuitions, ultimate beliefs, and ecological knowledge (not the science of ecology) (Naess 1973, Sessions 1995: xii, Sylvan and Bennett 1994). According to Naess, the shallow movement focuses on "the health and affluence of people in the developed countries" by resisting "pollution and resource depletion" while deep ecology is characterized by biospheric egalitarianism; self-realization; holism; and the prioritization of diversity, symbiosis, complexity, decentralization and anti-classism (Berry 1995: 15, Naess 1995d: 151–52). Later, Naess, and other deep ecologists divided the platform of deep ecology, shared by many with different metaphysical commitments, from those particular to Naess (Naess 1989, Naess 1995b: 214).

The most well-known feature of deep ecology is its emphasis on intrinsic value, the idea that every entity has value in and of itself, not just because humans or other animals use them for food, shelter, or ecosystem services such as cleaning the air or water; because humans think they are beautiful to

look at; because humans might want to use them later; because humans like to know that they are there. Aside from its focus on intrinsic value, the core platform shared by most deep ecologists claims that "Humans have no right to reduce this richness and diversity except to satisfy vital needs" and that "The flourishing of non-human life *requires* a smaller human population." The platform also asserts that since the situation is bad and getting worse people who share its tenets are obligated to change policies and social ideologies (Naess 1995a: 68).

Naess himself grounded this platform on a metaphysic in which the interconnection between entities is described as the "relational, total-field image" in which entities are "knots in the biospherical net or [a] field of intrinsic relations" as opposed to distinct entities (Naess 1995d: 151, Sylvan and Bennett 1994: 153–54). For Naess, it is through the process of self-realization that we become one with the world and more fully ourselves (Naess 1995c: 226). Empathy arising from this process combined with the knowledge that our very selves are constituted by relationships with people, places, and all of nature suggested to Naess that we must act on behalf of the environment (Naess 1995c: 226–27, 231).

Naess' ideas about preferred human action regarding the environment tend toward ideals rather than implementable principles. For example, all environmental actions, according to Naess, must be guided by the ideal of "biospheric egalitarianism," treating every entity equally (Naess 1995d: 151). Naess qualifies this ideal with the phrase "in principle" as he realizes that living creatures must eat and thereby kill some and not others – radically unequal treatment at the individual level. Yet after this qualification, Naess does not describe how one can be egalitarian or even move toward this ideal when one must eat, breathe, and do all sorts of other actions which may harm others. Similarly, when Naess prioritizes diversity, symbiosis, and complexity in the environment because ecologists recognize their importance in thriving ecosystems, he does not address how humans are to achieve these goals given that biologists have a difficult time determining what levels of complexity, diversity, and symbiosis are preferred for an ecosystem. Overlooking these concrete issues makes it difficult to understand how to fully apply Naess' theories, unless like Naess, one thinks that if we become whole people we will intuit how to live appropriately in and with the world in each situation and that this knowledge will directly translate into action.

Naess' work has been influential on radical environmental movements. Terms such as "intrinsic value," and "biocentrism" as well as Naess' work advocating Gandhian nonviolence were picked up by Earth First! in the 1980s. Additionally, Earth First! members and other deep ecologist activists have developed rituals to tap into the experience or intuition of nature discussed by Naess (Taylor 1991: 258–59). Thus, Naess' work is not just an academic theory but has shaped an emerging, lived, worldview.

Inside academia, Sylvan and Bennett aim to enrich the philosophical discussion of Naess' deep ecology, modifying it as necessary to be logically

consistent, intellectually convincing, and (hopefully) morally inspiring. Specifically, they reject biospheric egalitarianism in favor of ecoimpartiality, articulate several obligation principles of noninterference, and dismiss Naess' concept of self-realization. Sylvan and Bennett object to the prefix "bio" in Naess' biocentric egalitarianism since it is supposed to encompasses much more than the biotic even though Naess does not adequately explain how his concepts can apply to the inanimate (Naess 1995d: 151–52). They ask how inanimate objects can "live and blossom" let alone have the right to do so (Sylvan and Bennett 1994: 100). They also object to the term "egalitarianism" because Naess does not articulate any criteria for when egalitarianism should be overthrown yet he does overthrow it from time to time (Sylvan and Bennett 1994: 101–2). They fear that without a criterion for applying biospheric egalitarianism humans will end up privileging themselves and deep ecology will surface into a shallow position (Sylvan and Bennett 1994: 102). To attempt to avoid these dangers, Sylvan and Bennett articulate a theory of "eco-impartiality" in which all entities are "objects of value" and "objects of ethical concern"; a smaller group are "objects having well-being, or welfare"; an even smaller group are "preference havers" and "choice makers"; then "rights holders"; then "obligation holders and responsibility bearers"; and finally the smallest group of "contractual obligation makers" (Sylvan and Bennett 1994: 140–42). According to this annular theory, latter traits in the list indicate greater moral standing; any entity that can make contractual obligations would receive greater moral consideration than those without this capacity. Entities within the same category should be treated impartially though they may be treated differently according to need, for example a large active dog may be given more food than a small sedentary one (Sylvan and Bennett 1994: 142, 154).

Their hierarchy of moral concern prompts Sylvan and Bennett to reject Naess' total holism or "relational, total-field image." While they agree that entities in the world are dependent on each other, they object to the easy extension of holism to the idea that there are no dualisms and even more problematically, to the idea that there should be no distinctions between entities. Instead, they argue that individuals and groups deserve moral concern albeit possibly of different sorts, as described above.

To ensure that the annular system does not result in the complete privileging of entities with more morally relevant traits, Sylvan and Bennett follow the Routleys' three obligation principles:

> 1) "not to put others (other preference-havers) into a dispreferred state for no good reason"; 2) "not to jeopardize the wellbeing of natural objects or systems without good reason"; and 3) not to damage or destroy items which "cannot literally be put into dispreferred states ... but can be damaged or destroyed or have their value eroded or impaired."
>
> (Sylvan and Bennett 1994: 147–48)

These principles can be described as "non-interference principles, which exclude[s] unwarranted interference with other preference-havers and unwarranted damage, ill-treatment, or devaluation of items of value" (Sylvan and Bennett 1994: 147). To ensure they do not prohibit eating and the fulfillment of basic needs, Sylvan and Bennett argue that the principle of noninterference only prohibits excessive use of natural items, not all use. With the introduction of these principles, Sylvan and Bennett shift the burden of proof. Instead of requiring people to show that an action would be harmful and therefore prohibited, they instead suggest that "reasons [need] to be given for interfering with the environment" (Sylvan and Bennett 1994: 147).

Sylvan and Bennett also dismiss Naess' notion of self-realization because they think it is chauvinistic. While Naess does include nonliving entities in those that should be cared for so they can "grow and blossom," he certainly does not describe how nonliving or nonsentient entities can be described as flourishing or as self-realizing. Additionally, he frequently uses human-centered and psychological language to describe self-realization yet does not discuss whether or how entities without self-awareness can be self-realized. Sylvan and Bennett do not replace self-realization with any particular principle or metaphysical statement, presumably because they do not see any advantages to the idea, instead focusing on rational justifications of their basic commitments such as intrinsic value (Sylvan and Bennett 1994: 110).

Thus, there are significant differences among those who follow the deep ecology platform. This sort of inconsistency is common in both emerging and long-existing worldviews. If deep ecology continues to be influential, it will likely work out some internal way of reconciling these polarities and/or develop more distinct subgroups. Rather than wait for such a change, I will utilize insights from these various branches of deep ecology in the comparison of ethical systems, recognizing that their diversity can only challenge and improve the identification of the broad principles.

4.2.2 From comparisons to broad principles

Following the criteria for comparison outlined above, this section will move through the ethical principles of Agenda 21 one by one, analyzing when aspects of the three ethical systems support or challenge each principle to discern which broad principles resonate with these systems. To ensure that the ethical systems are considered on their own terms I will also examine unique aspects of each system to determine if additional principles need to be articulated to register the critical points of these ethical systems. This analysis yields the broad principles of responsibility, farsightedness, justice, adequately assessing the situation, adaptability, careful use, and feasible idealism.

Responsibility

A foundation of Agenda 21's normative position is the principle of responsibility. Based on the interdependence of all people, economies, societies, and ecosystems in today's world and the commonsense idea that actions have consequences, Agenda 21 promotes two types of responsibility: admitting that we humans have contributed to environmental destruction and recognizing that we need to change our actions to slow or reverse it (Robinson et al. 1993: 32, 140, 142, 152, 161, 184, 212, 253, 263, 265, 309). Similarly, Nash, Llewellyn, and the deep ecologists assume human responsibility for environmental degradation and to prevent, diminish, or reverse it though they may discuss this in divergent ways grounded on different metaphysical claims.

For example, Nash believed that humans have a responsibility to protect human and biotic rights because people are complicit in environmental destruction and have the ability to act to lessen and, potentially, reverse environmental damage. His virtue of relationality arose from his commitment to responsibility and his assessment of the environmental situation as he maintained that all entities are fundamentally interconnected and that actions by one group may help or harm innumerable others. Relationality as a virtue, according to Nash, requires humans to prioritize interconnectedness and consider the consequences of our actions in and for the whole environment (Nash 1991: 66).

Nash also dedicated a virtue to human care for biodiversity. He thought that unless humans intentionally emphasize the value and preservation of otherkind, our policies will 1) devolve into anthropocentrism that does not appropriately respond to the God-created value in all entities and 2) harm humanity given the interconnectedness of all nature and the unforeseeable consequences of many actions (Nash 1991: 66, 210–14). Thus, he named "biodiversity" a virtue in *Loving Nature* to extend moral consideration to all creatures. Later, he changed this term to "bioresponsibility" to highlight human obligations to biota, rather than merely pointing to the fact of diversity (Nash 2001: 120). It would have been consistent to make a similar move from relationality to responsibility. Regardless of the terms used, for Nash, caring for and being responsible to and for others is considered an outpouring of God's love for humanity and humanity's response in love.

Responsibility is present Llewellyn's work in the idea of *khilāfa*. He maintains that the ontological status of and role for humanity from its very creation, willed by God, includes responsibility to others, primarily humans, though sometimes to animals (Llewellyn 2003: 190). It seems possible that human responsibility through *khilāfa* could be extended to more animals, plants, and, potentially, nonliving entities since all creation has value for Muslims, but this extension has, to my knowledge, not yet been developed.

As Nash's and Llewellyn's assumptions of responsibility arise from their visions of monotheistic creators, we see significant overlap in the way they view responsibility: both see it as a response to God, whether responding to God's love or will. The deep ecologists' vision of responsibility is similar to Nash's in a different respect: their assessment of anthropogenic environmental degradation grounds their idea of responsibility.

Part of the deep ecology platform argues that "Present human interference with the non-human world is excessive, and the situation is rapidly worsening," because human attitudes and use of technology do not recognize the intrinsic value of the world. Thus, they maintain that policies and ideology must be changed. Indeed, they claim that anyone agreeing to these points has an "obligation directly or indirectly to try to implement the necessary changes" (Sylvan and Bennett 1994: 95–99). Certainly this obligation is a way of expressing responsibility.

All three ethical systems stress responsibility for different reasons and have slightly different interpretations of whom one is to be responsible to or for. Yet permeating all of these systems is an admission of human culpability for environmental degradation and a recognition of and demand for change as in Agenda 21. Thus, responsibility holds as a preliminary broad principle after this three-part comparison.

Farsightedness

Though a notion of responsibility is found in many ethical systems, *sustainability* ethics are particularly characterized by their farsightedness, considering the long-range spatial and temporal consequences of actions, policies, and cultural and ecosystem change. Certainly farsightedness was a crucial part of Agenda 21 as emphasized throughout the document in general and in particular studies of aspects of human activity such as agriculture, healthcare, and industry. This principle, in various forms, is also found in the work of Nash, Llewellyn, and deep ecologists and thus functions as a broad principle.

Nash names his future-oriented and long-range virtue "sustainability." For him, it is primarily concerned with long-range intergenerational equity and involves "living within the bounds of the regenerative, absorptive and carrying capacities of the earth, continuously and indefinitely" (Nash 1991: 64). He comes to this virtue through a discussion of "anticipatory rights," the rights of future generations, who will exist as rights holders if we leave them sufficient environmental conditions to come into being. Because Nash takes scientific assessment seriously, he knows that past and present human activity threaten the ability of future humans to meet their basic needs as they threaten ecosystem services (Nash 1991: 206–8). Thus, he claims that acting to preserve the environment today for the long run is the best way to protect the rights of future generations. Nash knows that balancing the needs of the future and present may be quite difficult since they may suggest different courses of action, but does not think it is an insurmountable challenge since many "behavioral patterns – like sustainability and frugality – that will benefit future generations will also benefit the present one" (Nash 1991: 209).

Nash's use of sustainability is very similar to that of Agenda 21. Both require many other norms for their proper fulfillment and suggest a goal of an ideal state in which natural processes can continue indefinitely. Yet to avoid confusion between the multiple meanings of sustainability in Nash's work, I suggest differentiating between the goal of sustainability, "living within the bounds of the regenerative, absorptive and carrying capacities of the earth, continuously and indefinitely" (Nash 1991: 64), and the principle of farsightedness, in which it is right to consider the long-range spatial and temporal consequences of decisions, policies, actions, and ecosystem change. Making this move enables us to acknowledge the interrelationship of many norms in sustainability discussions, avoiding the facile oversimplification that valuing the future is the only normative claim of sustainability (Nash 1991: 64, Sylvan and Bennett 1994: 126, 172).

Llewellyn does not articulate a specific principle directing people to consider the future from within Islamic law but clearly recognizes that something like farsightedness is a critical component of an Islamic environmental law as he focuses upon legal instruments including *waqf*, *ḥimā*, and *ḥarām* which have historically and could today be used to prioritize the preservation of natural resources for the long run. A *ḥimā* is a piece of land set aside to follow God's purposes by serving the economic and environmental good of the whole community. Additionally, a *ḥimā* must have more benefits than drawbacks to society as a whole and cannot limit local people's access to resources that fulfill their basic needs. Building on or commercializing the land of a *ḥimā* is prohibited though it is sometimes able to be used for grazing, cutting trees, or making honey at regulated seasons and rates to ensure that the land is preserved for future generations (Haq 2003: 144, Llewellyn 2003: 212). While *ḥimās* have been most often used in these traditional ways, technically, they could be established for any reason that meets the criteria. Consequently, many Islamic environmentalists think *ḥimās* promote land and species preservation, improve water supplies, or serve as recreational, research, or educational areas to promote understanding and appreciation of the environment (Llewellyn 2003: 215). Indeed, Llewellyn claims that *ḥimās* are "the most important legal instrument in the *Shari'a* for conservation of biological diversity" (Llewellyn 2003: 216). Though *ḥimās* are an ecologically promising idea, their numbers have diminished significantly from approximately 3000 in Saudi Arabia alone in 1965 to only a few dozen today as lands once under tribal authority became nationalized and populations have risen (Llewellyn 2003: 213–15). Thus, Muslims working to promote *ḥimās* for environmental reasons will have to overcome prevailing political trends while reenvisioning how *ḥimās* will be governed and for what purposes (Llewellyn 2003: 217).

In order to motivate people to designate resources for *ḥimā* Llewellyn and others promote local education and the revitalization of *ḥarām* laws. A *ḥarām* is a "sacred territory, inviolable zone, [or] sanctuary" used to promote the welfare of all inhabitants (Haq 2003: 144, Llewellyn 2003: 208, 210). They are areas similar to a greenbelt surrounding each Islamic settlement and natural and developed water sources. *Ḥarīm* around settlements were traditionally used for forage and firewood but could also be used to preserve species intentionally, cleanse the air, and provide green space for recreation or aesthetic purposes. *Ḥarīm* around water also prevent water pollution, facilitate the maintenance

of water sources, and, by prohibiting new wells within their boundaries, preserve the water supply of existing wells (Llewellyn 2003: 210–11). While the use of *ḥarīm* to protect water sources is in jeopardy today because "the municipal commons of settlements are presently overexploited and not managed; the inviolable zones of water sources are largely ignored," Llewellyn and others argue that revitalizing this preservation and future-oriented part of Islamic law could significantly impact and the environment of future generations (Llewellyn 2003: 211).

The legal traditions of land preservation may be helpful in creating an Islamic environmental ethic, but their decline in recent years makes it important to look for other environmental resources within Islamic law. One of the most promising is the *waqf*, or charitable trust. *Waqfs* are established by a benefactor for the good of the community and have historically been a major source of funds for institutions such as hospitals and schools in Islamic societies. *Waqfs* can also support land or water sources set aside for community well-being as illustrated by the actions of Othman, later the third caliph, who bought the well of Ruma and turned it into a *waqf* for the good of the people at the Prophet's advice (Faruqui 2001: 2). By establishing more *waqfs* to preserve environmental assets today, land could be preserved for future generations as they slowly demonstrate the benefit of environmental *waqfs* and encourage others to donate such lands for preservation. As Islamic legal experts advocate the use of *ḥimā*, *ḥarīm*, and *waqfs* they demonstrate their commitment to farsightedness.

Farsightedness also plays a role in deep ecology. It is most noticeable in their critiques of standard economic and political practices that ignore the long-term denigration of natural resources and ecosystems (Sylvan and Bennett 1994: 126, 172). Aside from these discussions of economics, Naess, Sylvan, and Bennett tend to focus on the present because they want people to start changing their attitudes about intrinsic value and acting accordingly right now. Thus their work is not as explicitly farsighted even though much of their moral outrage is based on their desire for biota to continue into the far future.

Consequently, with farsightedness we see a principle resonant with each system whether explicitly discussed under another name (Nash), emphasized in the types of legal instruments highlighted (Llewellyn), or underlying and presumed in their recommendations (deep ecology).

From equity to justice

Through their farsightedness, sustainability ethicists look toward a certain type of future: one centered on equity, or more broadly speaking, justice. Agenda 21 emphasizes the ethical principle of equity, usually an equitable ability to meet basic needs, in its general pronouncements and its claims that often-marginalized people including women, children, the poor, citizens of developing countries, and indigenous people are equal to all others and

should be treated as such (Robinson et al. 1993: 26, 46, 50). Yet it does not explicitly discuss the very real problems of racial or ethnic environmental injustices; focuses on individuals, rather than communities; and does not specifically discuss equity with respect to nonhumans, three issues many find problematic. Thus, the idea of equity needs to be extended into a broad principle acceptable to the ethical positions in our comparison (Bullard 1994a: 59–61, Heredia 1994: 123–27, Heyd 1994: 131, Ott 1994: 219, Paden 1994: 261–63, Rolston III 1994: 270–80, Warren 1994: 321, Weiss 1994: 362).

Nash articulates a virtue of equity that occurs when 1) goods and services are distributed so that every person can participate in society with dignity and 2) the negative effects of human activities such as pollution are distributed such that no person or group is harmed disproportionally to the benefits they experience from the same activities (Nash 1991, 65). When equity is ensured all will have their basic rights, assuming there are enough natural resources to go around.

Llewellyn highlights similar ideas as he stresses the ideals of prioritizing universal needs, assisting those with less power, and prohibiting harm. Similarly, Islamic studies of water distribution highlight concerns for equity. Water, as one part of creation, is seen as a gift from God, owned by no person. This conviction, and the importance of water for all life, caused the Prophet to discourage the sale of water and forbid the sale of excess water. Also, as noted, the Prophet motivated Othman to establish the well at Ruma as a *waqf* and give away its water for free, emphasizing the needs and rights of all people to water (Faruqui et al. 2001: 12). Yet as Llewellyn and others focus on the good of the community as a whole, rights-based language is not always sufficient. A broad principle to resonate with these ideas must prioritize the ability of all individuals and communities to meet their needs equitably.

The principle also needs to be extended to account for Nash's commitment to biotic rights and the deep ecologists' commitment to intrinsic value. Nash separates equity among humans from biodiversity because he thinks that humans have some rights in addition to those of otherkind and thus deserve special, not equal, treatment under certain conditions. He also separates these virtues to call attention to biotic rights which have too often been ignored. Similarly, Naess' commitment to biocentric egalitarianism and Sylvan and Bennett's commitment to ecoimpartiality call for an ethical principle not merely focused on humanity.

Given these variations in visions of equity or justice more reflection is needed to articulate a broad principle to encompass these views. While two different principles, for humans and all others, could be articulated, as Nash does, the emphasis on biotic rights would not be acceptable to all and the sharp division between humans and others is not acceptable to the deep ecologists. Thus, this is a time to capitalize on the ability of the broad principles to encompass different, possibly contradictory specifications. I suggest a broad principle of justice which is minimally specified by equitable distribution of goods and services and may also include some combination of

participation in decision-making among humans, the consideration of intrinsic value for all or biotic rights or moral concern for groups of entities that share morally relevant traits. This move will allow such specifications without requiring them, enabling more people to use the broad principles while still holding onto their deeply held beliefs. Despite this broadness, the principle still can provide traction for ethical decision-making about index development, as will be illustrated in Chapter 5.

Adequate data assessment

Responsibility, farsightedness, and justice are all connected to the way people understand the state of society and the environment. I argue that adequate data assessment is an ethical principle in Agenda 21 because its authors presume that normative goals for sustainability are not just abstract ideals, but emerge out of the ecosystemic and societal context in which the authors find themselves. Thus, to develop and implement an action plan for sustainable development requires that communities and nations understand the environmental, economic, and social details of the situation in which movement toward sustainability is desired. To refuse to acknowledge, or seek out, the best knowledge about an environmental situation and its relationship to human society is to act unethically. Nash, Llewellyn, and deep ecology all rely on something akin to adequate assessment of the situation though they add specifications such as theological, philosophical, and intuitional data beyond the scientifically measurable data that Agenda 21 focuses on. Thus, adequate assessment of the situation works as a broad principle as long as it is expanded beyond the specifications pertinent to Agenda 21.

The recognition of the intrinsic value of otherkind is a particular way of specifying the broad principle of adequate assessment of the situation, though not one emphasized in Agenda 21. Deep ecologists believe that they gain this knowledge of the world through intuition or feeling, coupled with rationality, and understand it as a definite property of nature that must be considered in any moral decision just as pollution rates or economic factors are. Indeed, for some deep ecologists, intrinsic value may be more important than economic or political concerns; scientific data may be used primarily to assess the status of entities with intrinsic value.

Similarly, Nash's virtue of relationality relies on recognition of the interdependence of humanity and the environment, a type of assessment of the situation. While it is understandable that Nash would want to emphasize relationality given its neglect in the past, relationality could be subsumed under the broad principle of adequate assessment of the situation and responsibility. This move classifies mandates about observations in one principle while enabling the moral imperative of responsibility to stand on its own as a broad principle. Dividing the principles in this way enables both responsibility and adequate assessment of the situation to resonate with more traditions.

Adequate assessment of the situation also encompasses Nash's idea of the virtue of humility, a realistic assessment of the strengths and weaknesses of oneself, humanity, and the environment at large. Contrary to some popular ideas, Nash's humility is not perpetual self-denigration and does not require relinquishing one's talents, needs, or ideals, but rather involves 1) recognizing when one does not currently have the proper information or power to make and act on a decision; acknowledging that some information may not be obtainable because existing theories or instruments are limited or because complex systems make certain facts or relationships indeterminable; and 2) understanding, to the best of one's ability, the restorative capacities of the environment (Nash 1991: 66–67, 156–57). Humility prompts Nash to advocate for multidisciplinary approaches to environmental problems, recognizing that no one person or discipline is sufficient to address environmental problems. Thus, it too is a specification of a realistic assessment of the situation that goes beyond Agenda 21's focus on knowledge acquisition to recognize the limits of knowledge and action.

Building from the appropriate assessment of our own capabilities stressed in the virtue of humility, Nash also advocates a careful assessment of proposed solutions to environmental crises through the virtue of sufficiency. According to this virtue, one is ethical if one proposes and carries out solutions to environmental problems that are sufficient to address ecological concerns given the physical situation, political climate, knowledge, and technological and moral capacities (Nash 1991: 66, Chapter 8). Agenda 21 certainly aimed to prioritize sufficient solutions as it prompted developing science, educational, business, and government solutions to sustainability issues while attending to cultural values. It did not, however, examine moral sufficiency nor did it address the limits of these capacities to the extent Nash was able to do given his focus on humility. Thus, Nash's virtues of humility and sufficiency are not only intimately related to adequate assessment of the situation but also expand the set of specifications that can be classed under it.

Nash's virtue of solidarity aims to ensure that strategies for solving environmental problems are created in the community best equipped to solve them (Nash 1991: 65–66, 215–21). Insofar as solidarity is intended to identify the proper group to enact a particular solution to environmental problems it seems to be a part of adequate assessment of the situation.

Nash and Llewellyn also rely on theological assessments of the world including the belief that since God created all, all are valuable and, in Llewellyn's case, the idea of God making people *khilāfa*. While Agenda 21 does not necessarily advocate these particular approaches, it does emphasize developing strategies that rely on the values of individual communities.

Each of the three systems also relies on contemporary science in its assessments of the situations. Nash, for example, relies on scientific data about specific environmental problems including pollution, ozone depletion, and global warming to begin his analysis (Nash 1991: 23–29). Llewellyn advocates using a variety of sciences to adjust boundaries for *ḥarīm* around water