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37 The sustainability debate: *déjà vu* all over again?

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What can be said about *sustainability* that has not been said before? Is the term defined today with any more precision and specificity than in the past? Does "sustainability" denote a process or a goal, and has progress toward it been achieved? After 30 years and an extended period of eclipse, should we pay attention to sustainability? To be sure, sustainability has returned with a vengeance. It has become an all-encompassing watchword for environmental policy and practice, for production and consumption, for urban planning and rural extraction. It is pursued by universities, think-tanks, communities, corporations, and governments around the world. It is the silver bullet that will save the world … or will it? In the background to the term can be observed many of the terminological struggles and controversies of the past 50 years, including "limits to growth," "the population explosion," and "environmental security."[2] Whatever it is or does, sustainability continues to confuse and confound, being applied in contexts as diverse and distinct as military strategy, financial stability, and the world's environmental future. My goal here, therefore, is to assay and analyze the "sustainability debate," drawing not only on contemporary usages and practices but also extending the investigation into the realms of science and engineering. Whether sustainability represents something new in contemporary use and practice, or is nothing more than "*déjà vu* all over again," might become clearer by the end of this chapter.

I begin with a brief discussion of the history of sustainability as a concept, one whose general sense can be traced back as far as the mid-nineteenth century,[3] but which did not enter the more general environmental lexicon until the 1980s. I focus, in particular, on more recent usages, as the term appears in several diverse disciplines and policy circles, teasing out some of the obvious (and not-so-obvious) contradictions among competing usages. Then I consider the major approaches to sustainability and offer some thoughts and ideas about operationalizing it in a practical and meaningful sense. As a report on a concept, this chapter is by no means complete or comprehensive; at best, it covers only a fraction of the relevant literature.

What Is This Word, Sustainability?

The word "sustainable" appears to have been first used in "maximum sustainable yield" as applied to exploitation of fisheries.[4] Its wider usage began during the 1970s – in the title of a book edited by Dennis Pirages[5] and, subsequently, in the 1980 *World Conservation Strategy*[6] – and since then, the term has been applied in many different ways. The canonical definition

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[2] Lockwood 2010–11.

[3] Marsh 1847; Osborne 1948; and Brown 1954.

[4] Russell 1931.

[5] Pirages 1977.

[6] IUCN 1980, Sec. 1, §2, 3, 4.

of "sustainable development" was offered in 1987 by the World Commission on Environment and Development (WCED, aka the Brundtland Commission) in *Our Common Future*:

> Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. The concept of sustainable development does imply limits – not absolute limits but limitations imposed by the present state of technology and social organizations on environmental resources and by the ability of the biosphere to absorb the effects of human activities.[7]

Where the WCED sowed confusion was in its proposition that only massive growth in the global economy would make sustainable development feasible, an argument convivial to the growing influence of neoliberalism but flying in the face of earlier warnings about "limits to growth." In failing to resolve what, even today, appears a fundamental contradiction, the Commission shifted the focus of debate and policy from programmatic to definitional arguments, with the latter never satisfactorily resolved.[8] Over the ensuing two decades, a great deal has been written about sustainability,[9] and a myriad of projects and programs have been dedicated to it,[10] without anyone getting much closer to either definitional closure or concrete accomplishments.[11] Most analyses tend to report on what has been done and what *must* be done, but fall short in describing *how* to achieve the sustainability they so desire. Indeed, one can point to a plethora of such studies and analyses stretching back several decades, with only differences in titles and keywords to indicate when they were published.[12] As far as concrete accomplishments go, the record is diffuse, fragmented and somewhat equivocal. Whether this is a definitional problem or a measurement one, or both, has yet to be resolved.

This is unfortunate, inasmuch as we are now, once again, in the midst of a revival of "sustainability,"[13] most visibly on university campuses,[14] in urban planning,[15] and in industrial ecology.[16] These tend to fall into three related yet somewhat distinct approaches: first, sustainability through "green growth" via technological innovation and ecological modernization; second, sustainability via "green reform" of individual and corporate behaviors through market mechanisms; and third, sustainability by way of "green transformation" of cultural meanings, individual identities, and social practices in order to modify supply and demand, infrastructures and inputs. These are discussed below.

Green Growth: Technological Innovation and Ecological Modernization

"Green Growth" relies largely on "fixes" – technological, economic, and biological – to modify the impacts of human activities on the earth's natural resources and ecological systems.[17] Such fixes could include new technologies, internalization of impacts, and development of biomass-based substitutes for non-renewable resources. These will, it is argued, foster progress and

7 WCED 1987, 8.
8 Redclift 1987; Norgaard 1988; Lélé 1991; and Lipschutz 1991.
9 Redclift 2005.
10 Ford Foundation 2008; UN DESA/UNEP 2009; and World Bank 2009.
11 Luke 2005; and Khan 2008.
12 Curry-Lindahl 1972; Myers 1983; and Mittermeier et al. 2000.
13 For example, Dresner 2008; Heberle and Opp 2008; Hinrichs and Lyson 2008; Sherman 2008; Speth 2008; and Szokolay 2008.
14 Bartlett and Chase 2004; and Sherman 2008.
15 Heberle and Opp 2008; and McKendry 2011.
16 Hertwich 2005; and Jackson 2005.
17 Kates 2010.

sustainability without requiring much in the way of changes in people's behaviors and social practices. Thus, ecological modernization,[18] environmental preservation/restoration,[19] and low- or no-pollution energy and decarbonization strategies[20] seek to reduce material flows into and out of production, consumption and disposal. A new energy source can replace a carbon-intensive ones, taxes and charges on noxious gas emissions will raise the prices of goods and services leading to lower consumption, organic agriculture will reduce chemical impacts on soil (with similar reasoning for other forms of resource use and waste production).

Advocates of "ecological modernization"[21] make such claims. As new systems of extraction, transportation, manufacturing, and consumption are developed, processes and products can be designed and deployed that, rather then dealing with "end-of-pipe" pollution, require fewer inputs, use those more efficiently, and generate lower levels of waste streams. Money will be saved on the input side and any higher costs can be internalized in the price of goods, services, and waste disposal, making consumers more frugal. But there are some serious flaws in this logic.[22] First, production efficiencies can be canceled out by larger numbers of units – such as automobiles and electronics – consumed. Emissions may be displaced from the individual unit (tailpipe) to the power source (power plant, in the case of electric vehicles). The "rebound effect" may result in increased consumption as the cost per unit declines and as the global economy expands.[23] Thus, even with ecological modernization and compulsory recycling programs, rising incomes around the world will lead to growing quantities of wastes and pollution through the "treadmill of production" and consumption.[24] Whether the technical fix can succeed is not at all clear. Biologists and wildlife ecologists often fall into the same trap, seeing sustainability in terms of species conservation, especially in the face of adverse conditions of adverse human development, intrusion, and utilization.[25] But protected status does not necessarily accomplish that goal, as illustrated by the sad case of ocean, coastal and inland fisheries.[26] No particular social context is assumed, and legal restrictions are all that is required.[27] What this approach generally fails to recognize is that not everyone is willing to accept even relatively small instrumental changes in their lives with equanimity. Resistance is ubiquitous.[28]

Green Reform: Changing Individual Incentives and Consumer Behaviors

A second approach to sustainability is more cognizant of the importance of "human factors," although these are frequently treated as the tail on a very technological dog,[29] with a focus on "greening" social institutions, especially markets.[30] Sustainability requires newly devised norms, regulations, incentives and laws devised to promote the general social "good" of long-term human prosperity. Better information, appropriate education, and enlightened interests

18 Mol 2001, 2002; and Orsato and Clegg 2005.
19 Mitsch and Jørgensen 2004.
20 MacKay 2009.
21 Mol and Sonnenfeld 2000; Mol 2001, 2001; Carolan 2004; and Cohen 2006.
22 York and Rosa 2003; Jackson 2005.
23 Gavankar and Geyer 2010; Owen 2010; and Tierney 2011.
24 Gould et al. 2008.
25 Rockwood et al. 2008.
26 Russell 1931; Anderies et al. 2006; Helfman 2007; and Delta Stewardship Council 2011.
27 Hirsch 1977; and Jackson 2005.
28 Bauer 1997; and Whitfield et al. 2009.
29 Winner, 1988; and Smith and Stirling 2008.
30 Dillard et al. 2009.

will, together, raise producer and consumer consciousness, trigger popular demand for rational laws and necessary policies, and bring about sustainability. But "interests" are not that easy to specify nor is it certain that consumers will accept regulations and laws deemed necessary for sustainability (and formulated by whom?). Specifically, interests have much more symbolic content than is generally recognized, and are often associated with ideologies and identities in ways that are not easily disaggregated. Indeed, some research suggests that identities precede interests, with the former shaped more by meanings and symbols than by markets.[31]

Second, it is not evident that information and education actually lead people to recognize their "true" interests. Here, we must distinguish education from socialization. The latter begins in an individual's early formative years and is accomplished through schooling, religious instruction, culture, social narratives, and media, leading to "naturalization" of beliefs and practices, such as "more goods means greater happiness" and "it is good to consume." Education, by contrast, relies more on critical thinking (and skepticism) in the face of the many truth claims made in markets, media, and culture. The inculcation of radical skepticism via education may actually contribute to cultural conflicts and resistance to change, as seen in struggles over environment and economy. People "learn," but they do not necessarily learn what leaders, experts, and policy-makers would like them to.

Green Transformation: Meanings, Identities, Practices

A third approach to sustainability pays close attention to "culture" and "meanings," and their role in identity construction.[32] There is no society without symbols and signifiers, closely linked to real, material lifeways. People relate to each other and to the material world not only to survive but also to maintain the societies and social orders in which they live. They rely on cultural signifiers and meanings giving purpose and direction to life. "Sustainability," therefore, rests on major transformations in concepts, meanings, and practices that may well be incommensurate with historical, normal behaviors, orders, and infrastructures. New or different ways of thinking and doing are not evidently "better" or more rewarding or enlightening; they are different and may not "fit" into that regarded as normatively natural. Social change and transformation are always disruptive and disturbing.[33]

How might such transformations come about? Adrian Parr examines how "sustainability culture" has penetrated various segments of American society, especially the upper middle class.[34] Participants in this culture have begun to alter collective behavior through changes in signifying practices – for example, on the basis of social recognition of hybrid and electric cars and the infrastructural changes that could result – although we should recognize that such new social practices are readily commodified, becoming new opportunities to produce and consume. Nonetheless, that "sustainability" has become a signifier for a deeply felt and growing need to do something other than consume mindlessly is not an insignificant matter, and such examples show that people can be actively involved in shaping, transforming, and giving new significance to social being and social relations.[35]

Three points can be made here. First, beyond basic subsistence, human social and cultural practices are strongly shaped not by how much we consume and abuse ecosystems, but what

[31] Jackson 2005.
[32] Jackson 2005; Parr 2009; and Lipschutz 2012.
[33] Marx and Engels 1848 [1969]; and Berman 1982.
[34] Parr 2009.
[35] Jackson 2005; Jones et al. 2010; and Lipschutz 2011.

end and meaning we give to such actions.[36] Function is not merely about functionalism. In seeking broad change in social behaviors and practices, it is necessary to address not only institutions and technologies but also social and cultural signifiers. As an example, it is not enough that we drive more energy-efficient automobiles or even that we drive them less; rather, we need to normalize and internalize a new ethic of automobility that differs from today's highly individualistic one. It does not hurt to drive gas-sippers, but the very meaning of being able to drive wherever and whenever one wants must change.[37]

Second, there is a difference between short-term, instrumental changes brought about by rising costs, prohibitions, and more-efficient technologies, and long-term and lasting changes arising from the deep internalization and adoption of new social norms, practices, and materialities. We may well drive less as gasoline becomes more costly but, in the absence of truly radical and sustained price increases, transformed behaviors are unlikely to continue for very long.[38] By contrast, if the *habitus*[39] of mass transit and reduced mobility can be internalized as normalized practices rather than "free" choices, reversion to old ways is less likely.[40] Humans are not cybernetic automatons like thermostats; they can be socially "guided" to alter customary practices.[41]

Third, there is room for the technological and policy "fix," if only to ease the strains and tensions inevitably associated with deep transformations in social signifiers, practices, and commitments. A fuel-efficient car and a well-insulated (and modest) home can facilitate lower impacts on ecology and environment and contribute to long-term sustainability. Even these, however, rest on changed (govern)mentalities about what it means to be mobile or warm (or both), and probably changes in identity and place in community, as well.[42] There are examples to which one can point that illustrate how such changes come about – the disappearance of social smoking since 1960 – but what is entailed specifically in such change is much less clear.[43] There is a considerable research agenda to be developed here.

Implementation and Policy

Today, there is much talk of sustainability, but are there any evident policies or resulting impacts? If we take a rather broad view of what "sustainable" means, considerable effort has gone into sustainability, with only limited documented successes. This is hardly surprising; even after decades of climate science and politics, there is hardly a consensus on how to measure greenhouse gas emissions and reductions with precision or even what is to be done about global warming. There is little doubt that sustainability is a driving factor behind the greening of cities, the attention paid to the environmental impacts of development projects, the push to create green industry, and the green jobs that go with it.[44] But as suggested above, these projects generally treat symptoms rather than causes, and involve only limited efforts to transform the behaviors, structures, and practices that remain deeply committed to and intertwined with nonsustainable infrastructural and social systems. This might be attributable to the absence of

36 Thompson 2003; and Lipschutz 2012.
37 Böhm et al. 2006; and Paterson 2006.
38 Hertwich 2005; Gavankar and Geyer 2010; Owen 2010; and Tierney 2011.
39 Bourdieu 1985.
40 Lipschutz 2011.
41 Jones et al. 2010.
42 Eckersley 2004; and Swyngedouw 2010.
43 Lipschutz 2012.
44 Hoffman 2011.

a conceptual definition of sustainability with clearly defined metrics and goals as well as confusion and ignorance as to how the myriad different parts of even simple production, consumption and disposal processes and chains-of-custody are linked together.[45] "Life-cycle analysis" goes part of the way toward this goal, but it does not extend to the social practices associated with goods and services. More to the point, pursuit of "sustainability" within the context of a commitment to global capitalist growth cannot lead to the kind of systemic transformations required.[46] Here, I assay several approaches to implementation of sustainability: (i) sustainability process versus context; (ii) sustainability through regulated versus free markets; and (iii) social transformation for sustainability.

Sustainability Process versus Context

Under this rubric, we find two, somewhat distinct approaches. The first seeks changes in commodity chains, so that each step in the lifetime of a commodity meets sustainability criteria. One well-known example of such programs is that of the Forest Stewardship Council (FSC), whose certification requires that timber be sustainably produced, that wood materials and products be shipped and shaped according to sustainable practices, and that consumers be informed of the provenance of any FSC-certified wood or wood product purchased.[47] Although FSC standards may set the pace for other certifying groups, for the moment the fraction of certified forests and goods remains a very small percentage of all the world's forests and timber products, perhaps because of the higher price of certified materials or simple consumer indifference. What certification has not done is to reduce global consumption of timber or replace wood with materials whose environmental impacts are less (and do such materials even exist?). Moreover, it is even possible that growth in plantation forestry for pulp production and carbon dioxide sequestration, as opposed to conservation and restoration of tropical and temperate forest ecosystems, is decreasing sustainability. The numbers, such as they are, are unclear.[48]

A context approach, by contrast, focuses on the myriad parts of human environments and institutions, seeking to systematically make them sustainable. Urban sustainability is of the first sort, based on programs, incentives, and projects that transform and reduce ecological "footprints." Cities frequently establish such programs in order to attract "green" business as well as younger, well-paid professionals who will increase the urban tax base and foster gentrification. In doing this, however, urban governments may be driving out lower-income households whose consumption levels are low and reuse levels high, replacing them with households that consume more and dump recently acquired goods on the basis of obsolescence and style.[49] A more integrated and contextual approach is needed to avoid such outcomes.

Organizations and institutions, buffeted by budget crises and orders from above to reduce spending, often see sustainability as a means of reducing expenditures on the goods (and labor) required to operate. Corporations and universities hire sustainability officers and open sustainability departments (whose employees rarely know what to do). Staff, customers, faculty,

45 Swarr 2009.

46 This, of course, is a highly contested point; the entire premise of "green growth" rests on achieving an environmentally friendly and socially just form of capitalism. Tom Friedman has been a relentless proselytizer in support of this proposition in *The New York Times*. For a more skeptical view, see Singer 2010.

47 Cashore et al. 2004; and Lipschutz 2005.

48 Fearnside 2000; and Fahey et al. 2010.

49 McKendry 2011.

and students are encouraged to be more conscious of their environmental choices and behaviors. Buying recycled paper, reducing interior building temperatures and lighting, getting rid of dining trays in cafeterias and offering smaller food portions, telecommuting, carpooling, and fewer business trips are all part of such efforts, but they need to be done in a more contextual fashion, focusing on not only the constituent parts but also the overall purpose and structure of the organization.

Of course, many of us live in highly decentralized societies, in which coordination among their myriad parts is weak or non-existent, and whose primary form of regulatory information is "price." Both process and context approaches to sustainability are premised largely on the idea of raising the cost of less-sustainable activities, thereby encouraging reduced consumption or substitutability, or lowering the cost of more-sustainable activities, thereby encouraging their increased consumption and practice. Yet, the price "signal" is often diffuse or even lost in the noise. Action is socialized across a relevant agency or unit, with each individual member making a small or even invisible contribution to the effort, with returns captured by the agency or unit, which seeks savings in terms of lower revenue requirements rather than rewards that might be redistributed as incentives. There is no glory in not consuming a kilowatt hour or two hundred sheets of paper, while injunctions to loyalty, commitment, and consciousness will only go so far.

Sustainability through Regulated Versus Free Markets

These observations lead to a somewhat different perspective on sustainability: what is the best way to encourage, or even pressure, agents to "go green," consume efficiently and waste less? Here, we run into longstanding debates over power, authority, and freedom, and the role of states and markets in changing processes and institutions. In this instance, virtue is replaced by discipline: one changes not because it is the "right" thing to do but, rather, because laws and rules demand it. At one extreme, regulation relies on strong police powers and peer pressure to ensure obedience to the rules – "command and control"; at the other, on self-discipline and self-interest based on "freedom of choice." In the first, the state takes on the role of defining acceptable practices, policing them and punishing violations; in the second, the state only defines property rights and imposes fees or taxes on non-sustainable activities, largely staying out of policing and assuming that an individual's failure to fulfill his or her interests is the best punishment and incentive to change.

My focus here, however, is political rather than economic: who decides what rules and laws will constitute sustainability and how it is to be achieved? Neoclassical economists and libertarians generally argue that any imposed regulation constitutes a negative restriction on individual freedom. Internalizing the costs of sustainability allows individuals maximum freedom to purchase just as much sustainability as they can afford, although in the absence of some standard metric to determine the magnitude of internalized costs, there is no practical way to determine which choice yields the most "sustainability." In a system that operates on the principle of lowest cost and greatest profit, the cheapest goods and services are rarely the greenest, and the greenest are rarely the least costly. There is profit to be made in catering to sustainability, but not that much.

With command-and-control regulation, it is the state, perhaps on the advice of experts, that determines sustainability benchmarks and requirements. This, too, will raise the cost of production and consumption, but the economic aspects of this approach are of less interest than the political ones. All else being equal, if the state seeks to require particular standards of

sustainability behavior from all of its members, whether individual or corporate, it is imposing not only a cost but also an ethic that all must observe and a cost that all must pay (socialization of costs and benefits as opposed to their privatization). To be sure, the specific cost will vary, some might not be able to afford to pay it and others will find ways to avoid payment. In those instances, however, the state can subsidize some costs for the general welfare and in the interest of the polity (and environment) as a whole, and devote resources to preventing cheating and corruption. In practice, these are difficult tools to deploy, especially in liberal states, but they are not impossible. That is why writers Robert Heilbroner and William Ophuls thought a "Green Leviathan" might be both necessary and inevitable.[50]

Can we point to cases of growing sustainability as a consequence of either process or context approaches? The empirical evidence on this count is rather murky, at best. We have the cases of the now-defunct socialist countries which had fairly strong environmental laws and fairly abysmal environmental records. We also have evidence from market societies, in which there have been marked improvements in particular environmental sectors, but only infrequently as a clear result of free markets (sulfur dioxide cap and trade is often cited as a success in this respect, but that is hardly a "free" market in the neoclassical or liberal sense). Finally, we can also point to sectors in which sustainable practices have been deployed without great effect on end results, as in the electronics industry, whose products may be more recyclable than ever but which are being produced and disposed of in ever-increasing quantities. That the choice between the two approaches to regulation for sustainability is a political matter, rather than a purely economic one, seems largely to have been lost in the effort to minimize electoral consequences.

Social Transformation for Sustainability

A third broad approach to sustainability is related to the two preceding ones, but focuses more on individual choices in relation to social practices, perhaps with intervention of both states and markets. At the end of the day, we can ask what motivates the production and consumption of those particular goods and services that work against a transition to sustainability? Changing what are accepted and even required practices is not straightforward if alternatives are not readily available and impose high costs on those who wish to change.[51] "Green consumerism" is one such approach, according to which, if masses of individuals seek sustainable goods and services, the market will have no choice but to respond and, in so doing, will carry societies along. Yet, this logic may not stand up. On the one hand, the availability of "greener" automobiles grows ever greater. On the other, this has had little discernible effect on either oil consumption or automobility, especially as the global demand for cars continues to grow. What, then, could render transport more sustainable? Here is where things become particularly complicated: can such a deeply embedded and integrated social complex be transformed through instrumental changes to its many components? Not only would mobility have to be restructured, both materially and symbolically, but so would living patterns, transportation alternatives, highways, gas stations and auto repair shops, factories and suppliers, tire manufacturing and sales, gasoline refining, and on and on. Where and how could one begin to engineer such a massive change?

In the United States, the automobile is such an integral part of everyday life that it is difficult to imagine its place and status being altered in any significant fashion. Not only does the

[50] Heilbroner 1991; and Ophuls and Boyan 1992.
[51] Jackson 2005.

infrastructure of American life require a car, but so do consciousness, identity and subjectivity. To be without a car is to be less than a full member of society; certainly, to be carless means that full participation in the normal practices of everyday life becomes difficult if not impossible. Can we imagine a society in which subjectivities and practices associated with automobility make the car a burden or even a reviled object? There is only limited historical or social psychological research focused on such projects.[52] By far, the vast bulk of technological and sociological research on sustainability ignores the larger social context in which mentalities and practices are embedded. The limited results arising from instrumental approaches suggest a need for much more extensive sociological research, as well the willingness to engage in the "social engineering" (or "soft paternalism") necessary to change the beliefs and practices of consumers and societies.[53] Inasmuch as advertising has been shaping subjectivities for more than 100 years, we might recognize that the required social transformations are not impossible.

Conclusion

We have been down this road before – with "appropriate technology" during the 1970s and 1980s and "sustainable development" during the 1990s – reifying concepts and presenting them as the "solutions." There is something attractive about being able to name that which must be done, but it does not accomplish very much about the doing. More to the point, unless we learn from other cases and examples in which social transformation did occur, and are able to determine how sociological, cultural, and technological elements came together, sustainability may become just another one of those words that, for a time, was on everyone's lips but, eventually, vanished, to be replaced by another word offering similar promises.

Ultimately, the challenge to achieving "sustainability" is less about too much or too little and more about why and what: what is it that constitutes the "good life" in the twenty-first century and why finding ways other than simply reducing material impacts on the world is part of achieving this "good." That, in turn, requires much more attention to politics and less to markets, an approach that appears increasingly unlikely to develop from the top down. Rather, as the pace and scale of local sustainability projects grows – and there is considerable evidence to show that they are growing – the social subjectivities and collective consciousness that must go hand-in-hand with technological innovation and material change may spread.[54] Whether this will, eventually, bring us to sustainability is something we can only wait to see.

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[52] Lipschutz 2012.
[53] Jones et al. 2010.
[54] Hoffman 2011.

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