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EDITORIAL

Erik Assadourian
Worldwatch Institute

Cultural change for a bearable climate

Introduction

The use of war metaphors has increased over the past few years in discussions about climate change. Particularly notable is a doubling between 2006 and 2007 in the number of English-language news articles mentioning the war on/against climate change. Also relevant in this regard was the move in 2008 by industrialist Richard Branson to establish the Carbon War Room to fight climate change. There is even now in the UK a discussion of war-time-esque carbon rationing (Cohen, 2010). But will this be enough to “mobilize” society to address climate change? A social media effort produced in 2010 by over two dozen animators—created to energize the “troops” to deal with climate change—raised an essential point: “a war on global warming needs to be a war on consumerism.”¹ It is rare that this connection is made so clearly. Of course, the narrator then indicated that governments will not fight this war because they are locked into a paradigm where their perceived survival depends on perpetual economic growth centered on consumer spending (either directly or, for export-heavy countries, indirectly).

Making this connection is an important first step, and now, perhaps we are ready for the second step: surrendering the war against climate change altogether, and mobilizing for an all-out shift away from the consumer culture and proactively engineering a culture of sustainability. Such a change would entail working to shift cultural norms so that living sustainably becomes as natural as living as a consumer feels today. Only by intentionally harnessing key societal institutions—namely education, business, the media, government, traditions, and social movements—will we be able to transform cultural norms (and the resultant economic, social, and consumption patterns that stem from them) to the extent needed to stabilize the climate and prevent severe disruptions of human society.

The Unsustainability of Current Consumption Patterns

Before describing the necessary cultural shift away from consumerism it may be worth exploring why such reorientation is required in the first place. The evidence unambiguously demonstrates that current consumption patterns are unsustainable and must be altered if human society is to remain stable and at current (or even larger) population levels. The Millennium Ecosystem Assessment (MEA) carried out from 2001 to 2005 found that approximately 60% of ecosystem services, including climate regulation, freshwater provision, fisheries, and many others were either being degraded or used unsustainably (MEA, 2005). This comprehensive review of scientific research also reminds us that the climate system is just one of the several vital ecosystem services being destabilized by modern society.

What has caused the human species to live so far beyond the means of the planetary systems on which it depends—to the extent that the board of the MEA even warned that “human activity is putting such strain on the natural functions of the Earth that the ability of the planet’s ecosystems to sustain future generations can no longer be taken for granted?” In part it is our sheer numbers: human population has more than doubled since 1965, to 6.8 billion people. However, as the well-known ecological footprint indicator reveals, population alone cannot explain our current crisis (Ewing et al. 2008). The Earth can sustain various numbers of people without depleting total biocapacity of the planet. The critical variable is how much we consume. For example, if all lived like those in low-income countries—averaging a per capita equivalent of about US\$1,300 per year, the world could sustain roughly 13.6 billion people.² If we all were to live like high-income country residents (earning an average of US\$33,000 per person), the Earth could sustain just 2.1 billion people. While shocking, these numbers should not surprise, for it is

¹See “Coalition of the Willing” available at <http://coalitionofthewilling.org.uk>.

²Monetary value is expressed here in terms of purchasing power parity (PPP).

the rich, not the poor, who have large homes and cars, fly in airplanes, use large amounts of electricity, eat more meat and processed foods, and buy more stuff—all of which have considerable ecological impact. Indeed, according to a study by Stephen Pacala (2007), the world's richest 500 million people (roughly 7% of global population) currently emit 50% of the world's carbon dioxide emissions, while the poorest 3 billion emit just 6%. Of course, higher income patterns do not in all cases equate with increased consumption, but where consumerism is the cultural norm, the odds of consuming more go up when wealthier, even among ecologically conscious individuals.

The Spread of Consumerism

Consumerism, at its simplest, is a cultural paradigm (or orienting pattern) where people find meaning, contentment, and acceptance primarily through what they consume. While consumption is a natural part of being human—one must eat, drink, and have basic clothing and shelter to survive—the level of consumption is almost completely driven by cultural norms. And in consumer cultures, that level has continued to increase, stimulated by new products and technologies, and new cultivated desires and needs.

At this point, consumerism is no longer simply an economic phenomenon but it has co-opted many elements of cultural systems. Brand logos, jingles, and “spokescharacters” have become dominant symbols. Cultural norms, such as diet, increasingly reflect consumerist influences. Even traditions are increasingly centered on consumerism. Rites of passage, like weddings and funerals, are celebrated in ways that consume significant resources and are perceived as abnormal if they do not. For example, the average funeral costs about US\$10,000 in the United States and requires significant financial and ecological resources (Harris, 2007).

One commonality among all these consumerized elements of culture is their intentional cultivation by dominant institutions. Businesses, the media, governments, and educational institutions have played a central role in orienting cultures toward consumerism.

Arguably, business interests have been the strongest driver of this cultural shift. On a diverse set of fronts, firms have found ways to coax more consumption out of people. For instance, the liberalization of credit drove an 11-fold increase in consumption in the United States between just 1945 and 1960. Manufacturers intentionally designed products to have short lives or to go quickly out of style (strategies called, respectively, physical and psychological obsolescence). And American workers were encour-

aged to take pay raises rather than increased time off, a process that elevated their disposable incomes.

Perhaps the most powerful tool for stoking consumer cultures has been marketing. Global advertising is now a US\$643 billion dollar industry. In the United States, the average “consumer” sees or hears hundreds of advertisements every day, and, from an early age, learns to associate products with positive imagery and messages. Plus, billions more are spent on subtler, more manipulative forms of marketing, like product placement (US\$3.5 billion annually).

Businesses, even as they pursue very limited agendas to expand sales for their products, play a significant role in stimulating consumerism. And, whether intentionally or not, they transform cultural norms in the process. Automobile companies, for example, have aggressively shifted cultures to be car-centric. In the United States, as early as the 1920s, manufacturers heavily lobbied governments for increased road construction, supported organizations that fought against regulating car usage, and even bought up and dismantled several public trolley systems. Fast food companies have used a combination of strategies to shift dietary norms, especially by targeting children with advertising, toys, restaurant playgrounds, and cartoon “spokescharacters.” Alone, McDonalds spends over US\$1.2 billion on advertising each year.

This is not to say that reorienting cultures around consumerism starts and ends with business interests. The media play a powerful role as well, now exposing audiences during one third to one half of their waking hours to various myths of consumer cultures in many of the world's countries. During this time, much of the media output reinforces consumer norms and promotes materialistic aspirations, whether directly by extolling the high consumption lives of celebrities and the wealthy or more subtly through stories that reinforce the belief that happiness comes from being better off financially, from buying the newest consumer gadget or fashion accessory, and so forth.

Governments reinforce consumerism through subsidies and policies that stimulate consumption growth, and educational systems also reinforce consumer norms both by allowing businesses to shape some of their curricula and by failing to teach children about the consequences of high consumption lifestyles. A lack of nutritional education (and of modeling proper nutrition in the lunchroom), a lack of media-literacy programs, and a dearth of basic ecological awareness (namely humanity's dependence on a stable Earth system for its survival), are major educational deficiencies that help to prop up the consumerist cultural paradigm.

Not surprisingly, as cultural norms have become increasingly centered on consumerism, participants in these cultures have become active players in driving, perpetuating, and spreading consumerist patterns. However, while consumerism has become normalized, that does not mean it is realistic over the long term. Because we live on a finite planet, defining our success and happiness through how much we consume is not a viable option. Moreover, there is a growing body of evidence that high levels of consumption do not effectively increase human well-being.³ Materialistic values have been shown to lower personal lifestyle satisfaction. The side effects of high consumption lifestyles, most notably obesity, increase illness. Moreover, the inequitable distribution of resources reduces social health and, after a point, wealth plays a diminishing role in contributing to the enhancement of subjective well-being.

So consumerism is not effective at providing human well-being and is very effective at undermining planetary well-being. It therefore makes sense to intentionally shift to a cultural paradigm where the norms, symbols, values, and traditions encourage just enough consumption to satisfy human well-being while directing more human energy toward practices that help to restore planetary well-being. Under such circumstances, the vast majority of humanity could live high quality lives (unlike today where one billion people are undernourished) and do so in a way that would allow our own and countless other species to thrive long into the future.

Cultivating Cultures of Sustainability

Donella Meadows explains that the most effective leverage point for changing a system entails changing its paradigm—that is to say, the shared ideas or basic assumptions around which the system functions.⁴ In the case of the consumerism paradigm, the basic assumptions that need to change include the notion that more stuff makes people happier, that perpetual growth is good, that humans are separate from nature, and that nature is a stock of resources to be exploited.

Reorienting cultures away from consumerism will demand the weakening of this dominant paradigm, instead strengthening an alternative sustainability paradigm where people find meaning and contentment not through their consumption patterns, but in living simply, restoratively, and justly.

Ecological restoration would also be a key assumption in this new paradigm. It should become as “natural” to find value and meaning in life through how much a person helps restore the planet as a person today finds value and meaning in how much she earns, how large her home and television are, or how many gadgets or shoes she owns.

Equity would also be important. As it is the richest who have some of the largest ecological impacts, and the very poorest who often by necessity are forced into unsustainable behaviors like deforestation in their search for fuel wood, more equitable resource distribution could help to curb some of the worst ecological impacts. Recent research also shows that more equitable societies have less violence, better health, higher literacy levels, lower incarceration rates, less obesity, and lower levels of teen pregnancy—all substantial bonus dividends (see, e.g., Wilkinson & Pickett, 2009).

More concretely, the role of consumption and the acceptability of different types of consumption could be altered culturally as well. Namely, consumption that undermines human welfare could be actively discouraged, through cultivation of new laws, traditions, rituals, social marketing campaigns, and so forth. The private consumption of material-intensive goods could be replaced with public consumption. Priority could be given to the consumption of services, or even minimal or no consumption when possible. And goods that do remain necessary could be longer lasting and designed in accordance with “cradle to cradle” principles (eliminating waste and being completely recyclable at the end of their useful lives).⁵

Having a vision of what values, norms, and behaviors should be seen as natural will be essential in guiding the reorientation of cultures toward sustainability. Of course, this cultural transformation will not be easy. Shifting cultural systems is a long process measured in decades, not years. Even consumerism, with sophisticated technological advances and many devoted resources, took two centuries to become dominant. However, as the spread of consumerism also demonstrates, specific actors can harness leading cultural institutions that play central roles in redirecting cultural norms.

The good news is that already significant efforts are being undertaken to reorient cultural orientations by steering several powerful institutions that have held key roles in driving consumerism: education, business, government, and the media, plus social movements and traditions, both old and new.

³See Assadourian (2010) for a concise overview on this point.

⁴Meadows’ writings on this theme are extensive. For an accessible overview of her work on system dynamics and societal change see Meadows (2008).

⁵See McDonough & Braungart (2002) for a useful introduction to the concept of “cradle to cradle” design.

In the realm of education, there are early signs that every aspect is being transformed—from pre-school to the university, from the museum to the lunch tray. For example, reformers are shifting school menus, and more food is coming from organic, local, and fair trade sources. Today, in Rome—a leader of this effort—68% of food served in schools is organic, 26% is local, and 14% is fair trade (Morgan & Sonnino, 2010). Schools elsewhere are integrating media-literacy training, communities are building toy libraries to encourage sharing and to reduce childhood commercialization. Even school commuting is being reworked to reduce ecological impact while modeling sustainable living, as demonstrated by “walking buses” (where children walk in chaperoned groups instead of being driven in buses) in Italy, New Zealand, and other countries.

The basic role of business is also starting to be readdressed. Social enterprises are challenging the assumption that profit is the primary or even sole purpose of business. From the Grameen Bank in Bangladesh to a restaurant chain in Thailand called *Cabbages and Condoms*, more businesses are putting their social mission front and center, helping people while being financially successful. New corporate charters—like the B Corporation (the B stands for Benefit) in the United States—are even being designed to ensure that businesses over time are legally bound to put the well-being of workers, customers, other stakeholders—and of the Earth itself—at the center of their business decisions.

In government, some innovative shifts are also taking place. A long-standing strategy known as “choice editing,” in which governments encourage good choices while discouraging bad ones, is being harnessed to reinforce sustainable choices. Current interest in this issue ranges from questioning perverse subsidies and taxing unsustainable behaviors to outright bans of unsustainable technologies like the incandescent lightbulb. And more than that, entire professional fields are being reassessed, from security to law. New concepts like Earth jurisprudence, in which the Earth community has fundamental rights that human laws must incorporate, are starting to take hold of the public imagination. In September 2008, Ecuador even incorporated this notion into its new constitution, declaring that “Nature or Mother Earth, where life is reproduced and exists, has the right to exist, persist, maintain and regenerate its vital cycles, structures, functions and its evolutionary processes” and that “every person, community, and nation will be able to demand the recognition of nature’s rights before public institutions.”⁶

⁶See http://www.asambleanacional.gov.ec/documentos/constitucion_de_bolsillo.pdf.

Films, the arts, music, and other media are all drawing more attention to sustainability. Even a segment of the marketing community is mobilizing to use its knowledge to persuade people to live sustainably. These “social marketers” are creating ads, Internet videos, and campaigns to drive awareness about issues as diverse as the dangers of smoking, the importance of family planning, and the problems associated with factory farming. While having only a tiny fraction of the resources as traditional marketers, with the help of social media these marketers are achieving dramatic effects.

Numerous social movements are starting to form that directly or indirectly tackle sustainability issues. Hundreds of thousands of organizations are working, often quietly on their own and unknown to each other, on the many essential aspects of building sustainable cultures. Together, these groups have the power to redirect the momentum of consumerism and to provide an appealing vision of a sustainable future. Efforts to promote working less and living more simply, the “slow food” movement, the “degrowth” movement, transition towns, and ecovillages are all inspiring and empowering people to redirect both their own lives and broader society toward sustainability.⁷

Finally, cultural traditions are starting to be re-oriented toward sustainability. For instance, new eco-friendly ways to celebrate rituals are being established and are becoming socially acceptable. Family-planning norms are starting to shift. Lost traditions, like the wise guidance of elders, are being rediscovered and used to support the shift to sustainability (Aubel, 2010). And religious organizations are starting to use their mighty influence to tackle environmental issues—printing green bibles, encouraging their congregations to conserve energy, investing institutional funds responsibly, and taking a stance against abuses of Creation, such as razing forests and blowing up mountaintops for coal.

Of course, all of these efforts together may not be enough considering that consumerism is so ingrained, that the majority of resources and wealth are still overwhelmingly promoting this pattern, and that few are even aware of the need to shift paradigms and many will resist such a shift. But regardless of resistance, as scientist James Lovelock notes, “Civilization in its present form hasn’t got long.” Consumerism—due to its ecological infeasibility—cannot continue much longer. The more seeds sown by the many pioneers of a sustainability culture now, the higher the probability that the political, social, and cultural vacuum created by consumerism’s de-

⁷For other examples of institutional shifts to cultivate cultures of sustainability refer to Worldwatch Institute (2010).

cline will be filled with sustainability ideals as opposed to less humanistic ideologies.

Then again, maybe the current economic and ecological disruptions will lead enough innovative “cultural pioneers” to start pushing dominant institutions to reorient toward sustainability instead of consumerism, triggering a dramatic cultural shift. Anthropologist Margaret Mead is often quoted as saying: “Never doubt that a small group of thoughtful, committed citizens can change the world. Indeed, it’s the only thing that ever has.” With many interconnected innovators energized, organized, and committed to spreading a sustainable way of life, a new cultural paradigm could take hold—one that will allow humanity to live better lives today and long into the future.

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About the Author

Erik Assadourian is a senior fellow with the Worldwatch Institute, where he studies cultural change, consumerism, ecological ethics, corporate responsibility, and sustainable communities. He is the director of Worldwatch’s Transforming Cultures project (<http://www.transformingcultures.org>), which disseminates the idea that many of our environmental and social problems are primarily symptoms of cultural systems centered on consumerism and growth, and that fixing these problems will come from proactively reorienting our cultures on sustainability. Living sustainably should then become as natural as living as consumers feels today. These ideas are discussed in depth in *State of the World 2010: Transforming Cultures—From Consumerism to Sustainability* that Erik directed. He has also managed the preparation of two editions of *Vital Signs*, the Worldwatch Institute’s annual analysis of sustainability trends, and codirected *State of the World 2005: Rethinking Global Security*. Erik can be contacted at: eassadourian@worldwatch.org.



INTRODUCTION

Individual consumption and systemic societal transformation: introduction to the special issue

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The social and environmental problems engendered by contemporary consumer lifestyles first received explicit international acknowledgement at the 1992 Earth Summit in Rio de Janeiro. Chapter Four of Agenda 21 from this event declared that “the major cause of the continued deterioration of the global environment is the unsustainable pattern of consumption and production, particularly in industrialized countries, which is a matter of grave concern, aggravating poverty and imbalances” (United Nations, 1992).¹ This particular framing of the root causes of the societal and ecological challenges confronting the world, not surprisingly, triggered a vigorous rebuttal in countries deemed to be most directly responsible, even prompting the first President Bush to proclaim that “the American way of life [was] not up for negotiation” (McKibben, 2005; see also Cohen, 2010).

Nonetheless, during the subsequent two decades, public recognition of the profound toll exacted by the heavy demands of affluent consumers in both developed and developing countries has widened and deepened (Myers & Kent, 2004; Chakravarty et al. 2009; Rockström et al. 2009; Assadourian, 2010). Numerous strategies have emerged to encourage the “greening” of consumer practices through, for example, the remanufacture of obsolete goods, the ecological design of products, and the introduction of multifold varieties of ostensibly “ecofriendly” merchandise (for recent reviews see Goleman, 2009;

Leonard, 2010). Life-cycle analysis, input-output analysis, material-flow analysis, and related techniques have made important contributions to these efforts.² In Europe and elsewhere, governments and supranational organizations have drawn on these insights to steer consumers toward preferable options, using ecolabeling schemes and public education campaigns (Boström & Klintman, 2008; Nash, 2009; Scholl et al. 2010). A few rare instances have entailed suppression of demand through taxation and prohibitions.

These developments are commendable, but they amount to little more than token gestures relative to the 90–95% reductions in greenhouse-gas emissions required to achieve global targets over the next few decades (Bennett & Collins, 2009; Berg, 2010). While these initiatives provide concerned individuals with potentially helpful ways to take action, they do not confront consumer culture and incessant political pressure for consumption-driven economic growth (Allen & Kovach, 2000; Muldoon, 2006; Autio et al. 2009; see also Luke, 2005; Princen, 2005). The main drivers of overconsumption in wealthy countries—housing policies that incentivize large-home construction, transportation policies that promote suburban sprawl, agricultural policies that encourage unhealthy diets, energy policies that induce profligate resource use, and financial policies that stimulate permissive money management—remain outside the reach of what is generally regarded as “green consumption.”³ Furthermore, the gains from energy and

¹It merits recalling that consumption was a key theme of the 1972 Stockholm Conference on the Human Environment, but the problems it posed were not explicitly conveyed in any of the event’s final communications. Instead, population growth in developing countries continued to serve as the pivotal concern in international discussions on biophysical carrying capacity throughout the 1970s and 1980s. In the United States, former President Jimmy Carter infamously tried to initiate a public discussion on the ill-effects of consumption, but his efforts did not have the intended effect on public policy (Mattson, 2009).

²See Tukker et al. (2010) and the articles comprising the associated issue of the *Journal of Industrial Ecology* for a recent overview of this work.

³An interesting development that is emerging in the United States as this article is being published is that the National Commission on Fiscal Responsibility and Reform is controversially proposing elimination of the lucrative mortgage-interest tax deduction, a provision that has long been recognized as a public subsidy that

materials efficiency are significantly dampened by rebound effects in the form of increased use or reallocation of monetary savings to other activities (Binswanger, 2001; Hertwich, 2005; Herring & Roy, 2007; Polimeni et al. 2008; Hanley et al. 2009; Herring et al. 2009).

In response to these circumstances, debates on sustainable consumption have recently begun to move in several new directions. Some scholars are examining the macroeconomic and political-economic context of consumption (Schor, 2005; Victor, 2008; Jackson, 2009; Cohen, 2010; Harris, 2010), the distribution of globally equitable allowances to emit greenhouse gases (McMichael et al. 2007; see also Meyer, 2000), and the notion of “de-growth” (Latouche, 2010; van Griethuysen, 2010). Other researchers are considering the prospects of transitions toward sociotechnical regimes that could enable more sustainable modes of consumption (Chappells, 2008; Rohrer, 2008), the role of bounded sociotechnical experiments (Vergragt & Brown, 2007; Brown & Vergragt, 2008), and studies of social practices (Evans & Abrahamse, 2009; Röpke, 2009; Gram-Hanssen, 2010). The recent emergence of the “new economics” as a visible field is evidence that many of these threads are being woven together into a coherent paradigm (Boyle & Simms, 2009; Schor, 2010; Speth, 2010).⁴ Notably, this research is beginning to fuse with a range of social movement activity organized around localism, alternative food systems, postautomobile transportation systems, and community responses to peak oil (e.g., Hopkins, 2008; Hess, 2009; Dennis & Urry, 2009; Follett, 2009).

It is in this intellectual space that the Sustainable Consumption Research and Action Initiative (SCORAI) is situated. A knowledge network comprising both academics and practitioners, SCORAI is the organizational nexus for work that addresses challenges at the interface of material consumption, human fulfillment, lifestyle satisfaction, and macroeconomic and technological change. This collaboration began in 2008 as a modest initiative of the Boston-based Tellus Institute to bring together like-

minded individuals from the surrounding area for monthly discussions.⁵ These meetings gathered momentum and members of a small founders group formalized the network’s institutional dimensions and organized an inaugural workshop in October, 2009 at Clark University in Worcester, Massachusetts. Approximately three-dozen researchers from the United States and Canada attended this gathering with the theme of “Individual Consumption and Systemic Societal Transformation.”⁶ This special issue of *Sustainability: Science, Practice, & Policy* contains several papers that were originally presented in draft form at this conference.

Lending the workshop a sense of urgency was that much of the world was (and is) still reeling from the collapse of major American and international financial institutions and the ensuing economic dislocations. Among other revelations, these events clearly exposed the connections between the global financial system and the global climate system: the endangerment of both systems could be attributed to doctrinaire allegiance to neoliberal economics and unquestioned pursuit of economic growth.⁷ Transformation toward an alternative paradigm will entail a new understanding of human well-being, one that is sustainable, equitable, and capable of fulfilling individual and societal aspirations for a “good and ethical life.” Given the intimate connections between material standards of living and generally regarded notions of human satisfaction, consideration of alternative economic systems is inseparable from debates on sustainable consumption and technological change.

This first SCORAI workshop furthermore acknowledged that, in comparison to developments elsewhere, organized scholarly and policy debates about sustainable consumption were seriously lagging in North America. During the early- and mid-2000s, Europe saw a veritable explosion of activity

contributes to the upscaling of home size, encourages low-density residential patterns, and compounds socioeconomic and geographic inequalities (Calmes, 2010; cf. Krugman, 2010a; see also Landis & McClure, 2010). Emergent political discussions on the imposition of a national consumption tax, as well as an increase in the federal excise tax on gasoline, further highlight that some of these issues are beginning to attract serious attention (Mankiw, 2010; see also Seidman, 1997). The establishment of the Consumer Financial Protection Bureau is another example of an effort to engage with the drivers of overconsumption.

⁴See also the New Economics Foundation (<http://www.neweconomics.org>) and the New Economics Institute (<http://neweconomicsinstitute.org>).

⁵An important source of inspiration for the establishment of SCORAI was a prior European project called SCORE! (Sustainable Consumption Research Exchanges).

⁶Financial support for the inaugural SCORAI workshop was provided by the ProQuest/U.S. Geological Survey Partnership, the Tellus Institute, and the following Clark University administrative units (Provost’s Office; Department of International Development, Community, and Environment; Graduate School of Geography; and Graduate School of Management). A comprehensive list of workshop contributions is available at <http://www.scorai.org/participants09.html>.

⁷Though authors demonstrate different postures with respect to the contemporary economic growth paradigm, a body of literature is developing on the common foundations of the financial and climate crises. See, in particular, de Zoysa & Newman, 2009; Foster & Magdoff, 2009; Hemerijck et al. 2009; Jackson, 2009; Kallis et al. 2009; Leichenko et al. 2010; Liu & Raven, 2010; Naughten, 2010; and Sampford, 2010.

on this front, marked by a steady stream of publicly funded projects, conferences, journal articles, and books in conjunction with robust interest on the part of policy makers who issued several national and multinational sustainable consumption plans (e.g., CEC, 2008; Nash, 2009; Scholl et al. 2010). It seemed as if hardly a week went by without a significant event on the issue in Brussels, London, Paris, or Berlin. While sustainable consumption did not attract the same kinds of formal attention in Asia, the topic did gain traction during this period among civil society organizations throughout the region (Hobson, 2004; de Zoysa, 2007; Zhao & Schroeder, 2010).⁸ In contrast, in North America (and especially in the United States), limitless household consumption continued to be regarded with little exception as an altogether beneficial societal objective. Skeptics were marginalized and taunted for threatening to kill the goose that laid the golden eggs. Calls to move household consumption in more sustainable directions were derided as softheaded and typically dismissed out of hand.⁹

What a difference two years makes. Between the formulation of plans to convene the first SCORAI workshop and the appearance of this special issue we have witnessed a sea change in public sensibilities and the policy landscape. There is growing recognition among observers across the political spectrum that lifestyles based on boundless consumer credit, status-fueled consumerism, and rampant advertising have fallen into disrepute. Exhortations to return to “the way things used to be” are losing their fervor. In the United States and parts of Europe realization is dawning that we may be facing a protracted future of no-growth and enforced austerity and Japan’s so-called “lost decade” is looming as the likely fate of several affluent countries (Goodman, 2009; Kang & Syed, 2009; Tabuchi, 2009; Krugman, 2010b). Commentators once derided as heretics and naysayers are now prominently featured on the pages of the international business press. The time is becoming ripe for new ideas.

The inaugural SCORAI workshop focused on both the socioeconomic and sociocultural dimensions of sustainable consumption. Attendees included sociologists, anthropologists, political scientists, geographers, ecological economists, environmental social

scientists, industrial ecologists, urban planners, marketing and management specialists, and scholars from the fields of science and technology studies and technology innovation studies. The workshop also included representatives from a variety of policy communities in the United States and Canada. The conference aimed to create connections across disparate disciplines, to formulate a North American research program around consumption and well-being, and to contribute to the ongoing policy dialogue around these issues. In sum, the twenty papers presented at the workshop addressed the following questions:

- What do studies of consumers’ responses to policy instruments and other interventions teach us about designing policies? What does this work tell us about active resistance to changing dominant consumption practices?
- Can new lifestyle choices emerge around the pursuit of well-being, leisure, or fun?
- What can the “make do” practices of the poor teach us about the nonmaterial means of pursuing well-being?
- If we are biologically predisposed to appropriate all available resources, what are the cultural framings/metaphors that institutionalize these behaviors?
- How does institutional change occur, especially with regard to habituated and entrenched social practices?
- While hopeful “change the light bulb” consumer behaviors seem to be gaining ground, they remain socially marginal and ecologically insignificant. How can these efforts be usefully scaled up?
- Is a new social movement required to affect lifestyle choices and/or to spur systemic change? Do many small initiatives facilitate or undermine social mobilization?
- Most lifestyle choices are not conscious in relation to big ideas such as sustainability. Is it necessary to raise that consciousness? Alternatively, is a more strategic response required to focus activist energy on systemic changes in the institutional-political-economic realm?
- Can professional elites become agents of change, or do they inevitably fall into the trap of incrementalism? What should be the role of non-governmental organizations (NGOs)? Do NGOs need to redefine their traditional role of principally lobbying for government policies?
- Is a “leisure-time transition” through workweek reduction necessary to create a steady-state

⁸See, for example, the Asia-Pacific Roundtable on Sustainable Consumption and Production (<http://www.aprscp.net>).

⁹The relatively low level of interest in sustainable consumption in Canada and the United States has been especially evident at the governmental level. For instance, the region was the last of five zonal groupings (Africa, Asia-Pacific, Europe, Latin America-Caribbean, North America, and West Asia) to convene an experts meeting under the auspices of the Marrakech Process (see Government of Canada et al. 2009).

economy? What is the feasibility of such developments?

One of the workshop's most important and tangible achievements to date has been the creation of a thriving network that spans a wide range of traditional academic disciplines and comprises scholars and practitioners who have come to identify themselves with the challenges of sustainable consumption.¹⁰ Members of this group further find that their work is powerfully enriched by interaction with policy makers and activists engaged on these issues in the field. A central goal of SCORAI is to further grow this network by launching new research projects, evolving the group's electronic platforms for internal debate and outward communication, and periodically organizing intense multiday workshops on cutting-edge ideas.

The core of this special issue comprises five contributions (four articles and one Community Essay) that were initially presented at the inaugural SCORAI workshop. The authors revised their work on the basis of extensive feedback at the event itself and in response to evaluations prepared by peer reviewers. We are grateful to the dedication of the contributors and extend special thanks to all of the participants and referees for their insights and candor. The special issue also includes an introductory editorial by Erik Assadourian and nine book reviews of recently published titles that we hope will be of additional interest to readers.

In the first article, William Rees reflects on the international community's feeble political response to the progressively more ominous prognosis for the global climate. Is it not, he asks, an indication of an irrational mindset for the public to disregard the warnings conveyed by these scientific appraisals? Rees seeks clues for this apparent disconnect in contemporary research on evolutionary biology and human cognition. He observes that human beings are, in ecological terms, quintessential K-strategists (i.e., large bodied, relatively long living), with a propensity to relentlessly appropriate all available carrying capacity. In the absence of any biophysical checks, human communities will inexorably perpetuate their own survival and reproductive success. This evolutionary predisposition is reinforced by various socio-cultural constructs such as the commitment to economic growth. We seem, Rees argues, to be captive to our own biologically determined survival tactics.

David Hess next considers the challenge of sustainable consumption from the standpoint of household resilience. Human ecologists, sustainability scientists, and others over the past two decades have

expanded our understanding of the role of resilience in buffering disturbances. Hess applies this general framework to examine the relationship between household resilience and sustainable consumption. He identifies two types of resilience: economic and material. Strategies to improve economic resilience can take the form of diversifying revenue streams and increasing household-level economic storage through savings, insurance, and education. Material resilience is pursued by investing in supplementary physical systems like back-up generators, space heaters, and other emergency equipment. These tactics can enhance or undermine sustainable consumption patterns. Hess presents expenditure data from two actual households: a single-individual household living under relatively modest circumstances and a relatively affluent household with two adults and two children. These case studies shed light on which purchase decisions consistently integrate resilience and sustainability and which put the two goals in conflict. The study shows how research and policy making on sustainable consumption can usefully be embedded in household financial management. Hess's approach arguably has greater utility for ordinary consumers than more abstract metrics like kilowatt hours, ecological footprints, and carbon-dioxide equivalents.

Richard Wilk draws on the work of linguist George Lakoff to argue that our view of the world is organized and structured through different metaphorical lenses that vary geographically, culturally, socioeconomically, and in other ways. Moreover, folk understandings typically deviate from expert appraisals. Wilk argues that consumption is generally interpreted in common parlance through metaphors like fire, eating, hunting, and gathering. The problem with this treatment is that we fail to distinguish between forms of consumption that are socially and environmentally deleterious (automobile driving) and others that are rather benign (collecting antique cars). In addition, seemingly nonconsumption activities—sports, political events, and investing—can involve appropriation of vast resources and engender considerable fluidity between “needs” and “wants.” Wilk suggests that a more effective metaphor for stimulating sustainable consumption would be a see-saw, as it evokes an inherent need to morally balance virtuous and errant consumer activities, though it is important to recognize that such lay accounting systems are unlikely to correspond to scientific assessments. He concludes by noting that contemporary knowledge of folk models of consumption is at a very early stage of development, but is a fruitful area for inquiry.

John Stutz draws on economic historian Angus Maddison's dataset stretching back two millennia to demonstrate that the post-World War II period of “explosive growth” among the world's affluent

¹⁰See <http://www.scorai.org>.

countries was accompanied by a growing “spread” between relatively affluent and poor nations. At the same time, incomes are now increasing in several developing countries, giving rise to new consumer societies. Improvements in technological efficiency—even if such strategies were to be pursued vigorously—will not offset the resultant growth in energy and resource consumption. Stutz posits the need for an income transition (analogous to the familiar demographic transition) predicated on a shift from material affluence to well-being. He then discusses how well-being could be enhanced through a reduction in working hours that would enable people in wealthy countries to pursue more personally satisfying activities. Reductions in income would slow the rate of economic growth in these nations and attenuate their energy and resource consumption while creating opportunities to achieve a more globally equitable income distribution. Stutz describes efforts to lower the intensity of environmental impact per unit of economic activity, to reduce the pace of growth in output, and to promote an income transition as constituting a “three-front war.”

The final core contribution to this special issue is a Community Essay by Tom Princen. Echoing some of Wilk’s themes, the commentary highlights the central role of metaphors for talking about both sustainability and sustainable consumption. Princen observes that if we are going to successfully embark on a more socially and ecologically sustainable path, it will be necessary to construct a new set of metaphors that reshape how we think. He describes how prevailing understanding of human-environment relations is conceptualized as threats that need to be tamed and that survival is dependent on continuous expansion. Princen argues that we need to set aside these dominant metaphors that regard the environment as a laboratory, storehouse, or battlefield. In their place, it is necessary to identify and nurture new, more effective and constrained lenses that are based, for example, on the notion of a watershed, neighborhood, or spaceship. He proposes that we need not discard completely the growth metaphor, but we need to frame growth as a process of maturation and improvement, rather than limitless extension and enlargement.

At the time this special issue is being published (November 2010), SCORAI is actively involved in planning its second workshop, due to be held in April 2011. As noted above, debates about the efficacy of economic growth have gained new visibility in countries of the global North over the past year, and different approaches for pursuing personal and societal well-being have become part of research and policy agendas. One way to organize this broad range of

activity is through a tripartite framework consisting of the search for alternatives to consumerism and individualism as social organizing principles, the design of economic models less reliant on consumer spending and personal debt, and the pursuit of more equitable distributions of income and work (to enable tradeoffs of goods consumption for leisure time and community engagement). This view simultaneously recognizes that developing countries need economic and consumption growth, but these goals should be mediated by “green” technology and other sustainable practices. Momentum on these issues is likely to build during preparations for the 2012 United Nations Conference on Sustainable Development (Rio+20) and as the problems inherent in the prevailing economic growth paradigm come into sharper focus.

Within this framework, this workshop aims to highlight the interstices among three important research approaches on sustainable consumption. First, work on *sociotechnical transitions* emphasizes technological innovation and diffusion and the coevolution of technologies, societal institutions, and culture, but is relatively silent on economic and political contexts and the nature of technology-human behavior interactions. Second, research on *social practices* centers on the mutual interactions between technology and commonplace daily behaviors and examines how more resource-intensive social practices emerge in response to technological innovations; however, to date scholars have paid less attention to the evolution of new technologies from a complex system perspective or to the economic or political drivers of consumption. Finally, studies in the *political economy of consumption* give prominence to the institutional factors that shape prevailing modes of consumption, but this work in the so-called “new economics” has tended to devote much less attention to the role of technology.

The event seeks to forge intellectual bridges across these perspectives, with the goal of enriching each one through novel framings, new analytic treatments, and development of a shared language. Participants will integrate work from ongoing research in several fields, including innovation studies, sociology of social practices, and ecological macroeconomics. The end result will deepen the current body of knowledge on how consumption patterns evolve in a technological society and expose more clearly the role that policy interventions, grassroots initiatives, small-scale experiments, social movements, and market actors can have in affecting changes consistent with twenty-first century needs.

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ARTICLE

What's blocking sustainability? Human nature, cognition, and denial

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In 1992, 1,700 of the world's top scientists issued a public statement titled *The World Scientists' Warning to Humanity*. They reported that "a great change in our stewardship of the Earth and the life on it is required if vast human misery is to be avoided and our global home on this planet is not to be irretrievably mutilated." More than a decade later, the authors of the Millennium Ecosystem Assessment were moved to echo the scientists' warning asserting that "[h]uman activity is putting such a strain on the natural functions of the Earth that the ability of the planet's ecosystems to sustain future generations can no longer be taken for granted." Ours is allegedly a science-based culture. For decades, our best science has suggested that staying on our present growth-based path to global development implies catastrophe for billions of people and undermines the possibility of maintaining a complex global civilization. Yet there is scant evidence that national governments, the United Nations, or other official international organizations have begun seriously to contemplate the implications for humanity of the scientists' warnings, let alone articulate the kind of policy responses the science evokes. The modern world remains mired in a swamp of cognitive dissonance and collective denial seemingly dedicated to maintaining the status quo. We appear, in philosopher Martin Heidegger's words, to be "in flight from thinking." Just what is going on here? I attempt to answer this question by exploring the distal, biosocial causes of human economic behavior. My working hypothesis is that modern *H. sapiens* is unsustainable by nature—unsustainability is an *inevitable* emergent property of the systemic interaction between contemporary technoindustrial society and the ecosphere. I trace this conundrum to humanity's once-adaptive, sub-conscious, genetic predisposition to expand (shared with all other species), a tendency reinforced by the socially constructed economic narrative of continuous material growth. Unfortunately, these qualities have become maladaptive. The current coevolutionary pathway of the human enterprise and the ecosphere therefore puts civilization at risk—both defective genes and malicious "memes" can be "selected out" by a changing physical environment. To achieve sustainability, the world community must write a new cultural narrative that is explicitly designed for living on a finite planet, a narrative that overrides humanity's outdated innate expansionist tendencies.

KEYWORDS: human behavior, ecosystem stability, survival value, world economy, cultural values, social organization

The (Un)sustainability Conundrum

In his review of Tim Flannery's book *The Weather Makers*, Andrew Nikiforuk (2006) drew a graphic verbal sketch of modern humans' ecological behavior (i.e., our *economic* behavior):

Let's face it: *Homo economicus* is one hell of an over-achiever. He has invaded more than three-quarters of the globe's surface and monopolized nearly half of all plant life to help make dinner. He has netted most of the ocean's fish and will soon eat his way through the world's last great apes. For good measure, he has fouled most of the world's rivers. And his gluttonous appetites have started a wave of extinctions that could trigger the demise of 25 percent of the world's creatures within 50 years. The more godlike

he becomes the less godly *Homo economicus* behaves.

This is the same enigmatic behavior that in 1992 inspired the Union of Concerned Scientists (UCS) to abandon the usual skeptically reserved language of science and to issue the following strident assessment: "We the undersigned, senior members of the world's scientific community, hereby warn all humanity of what lies ahead. A great change in our stewardship of the Earth and the life on it is required if vast human misery is to be avoided and our global home on this planet is not to be irretrievably mutilated" (UCS, 1992). What could be clearer? Some of the best minds on Earth were warning that without dramatic changes in humanity's relationship with the ecosphere, the lives of our descendants might well revert to being a Hobbesian "nasty, brutish, and short." But there is little evidence that the world

community has paid any heed to UCS's ecological call-to-arms. Thirteen years later the Millennium Ecosystem Assessment (MEA), the most comprehensive assessment of the state of the ecosphere ever undertaken, was moved to echo UCS: "At the heart of this assessment is a stark warning. Human activity is putting such a strain on the natural functions of the Earth that the ability of the planet's ecosystems to sustain future generations can no longer be taken for granted" (MEA, 2005).

Just what is going on here? Humans are the self-proclaimed "best evidence for intelligent life on Earth." Yet when the world's top physicists, ecologists, and climatologists warn repeatedly that current development strategies are undermining global life support systems and risking catastrophe for billions, the responses range from negligible to ineffective. True, "triple bottom-line" corporate planning is now fairly commonplace; various protocols for "green-building" compete to influence building codes; "new urbanism," "smart growth," and the ecocities movement are gaining ground everywhere; hybrid and electric vehicles are increasing their market share; and green consumerism is becoming mainstream in many developed countries—but none of this activity has made much difference (apart from fostering the illusion of progress) (Rees, 2009a). Almost all mainstream sustainability measures implicitly assume that the problem can be solved through greater material and economic efficiency and technological "fixes," ignoring the evidence that, to date, such strategies have actually *increased* the human ecofootprint.¹ Few challenge the fundamental beliefs, values, and assumptions underpinning market-based consumer societies or examine the hidden motivators of human individual or group behavior. On the contrary, all major governments and international development agencies are committed to maintaining the growth in *per capita* income that has characterized industrial countries for more than a century and to extending consumer culture to the three-quarters of the world's people who have yet to join the party (see Stutz, 2010 in this issue).² Efficiency gains are thus overwhelmed by a combination of material growth and the rebound

effect in even the world's most efficient economies (Layke et al. 2000). With no government or mainstream international agency willing openly to contemplate, let alone articulate in public, the revolutionary policy responses evoked by our best science, the modern world remains mired in a swamp of cognitive dissonance and collective denial (Pratarelli, 2008; Pratarelli & Aragon, 2008; Rees, 2009a). Meanwhile, the loss of ecosystem integrity accelerates around the world.

Looking Ourselves in the Eye

This article's overall purpose is to advance a relatively novel partial explanation for humanity's self-destructive behavior. The framing questions are: What are the "drivers" that have created our present (un)sustainability impasse? How can we explain the gap between people's knowledge of ecological degradation and their actual behavior toward the environment (Kollmuss & Agyeman, 2002)? Why is the global community so far unable to respond proportionately to the scale of the crisis? How do the answers to the foregoing affect both individual responsibility and prospects for a genuine social transformation toward achieving sustainability?

Most analysts approach the sustainability conundrum by addressing *proximal* causes and obvious solutions. For example, the ecological crisis is said to stem from excessive energy and material consumption and ineffective regulation (with resultant high pollution loads) on the one hand, or from chronic poverty and primitive technology on the other (poor people are more concerned with basic survival and cannot afford to pay for a "clean environment"). Occasionally, population growth is identified as a driver, but only by special interest groups not concerned about political correctness. And, as noted above, greater material efficiency, more ecologically benign technologies, and continued growth (to relieve poverty and generate the resources necessary to "clean up" the "environment") remain the only politically acceptable solutions.³ The lack of support for more determined policy is generally blamed on popular ignorance, the lack of caring, or apparent disbelief (Norgaard, 2009).

This article takes a different tack. I look more for the root or *distal* causes of unsustainable behavior and corresponding transformative solutions. In this context, the immediate questions become: Why,

¹ This counterintuitive result is known as the Jevons or "rebound" effect. Consider that efficient or technologically advanced firms are able to lower prices, gain market share, and increase wages and salaries to employees. As this phenomenon propagates through the economy, more money chasing cheaper goods and services results in increased consumption/pollution (back to where it would have been, or close, had the technological innovation not happened).

² Presently, the richest 20% of the world's population take home 76.6% of global income; the poorest 20% subsist on 1.5% (UNDP, 2007; Shah, 2010). As China and India move toward "developed" lifestyles, their environmental impact will become even more unsustainable than that of the West due to the huge numbers of people involved.

³ This rationale is based on naïve interpretations of the so-called "environmental Kuznets curve"—proponents allege that environmental quality first deteriorates and then improves with rising incomes (see Stern, 2004; Richmond & Zencey, 2007), but they often fail to distinguish among pollutants or account for the off-shore migration of dirty industries from rich to poorer countries.

given the opportunity, do humans tend to overconsume? How, in this age of plenty, can we explain the persistence of poverty? What drives the continuing growth of the human enterprise? I argue that we can answer these questions, and come to a fuller understanding of the modern sustainability conundrum, only if we examine them through the lens of human evolutionary biology.

The Human Nature of Unsustainability

This perspective owes much to the Russian-born geneticist Theodosius Dobzhansky (1964) who famously asserted that “nothing in biology makes sense except in the light of evolution.” If we accept that *H. sapiens* is a product of evolution and that both the human brain and gene-based elements of individual/social behavior have been as much exposed to Darwinian selective pressure as any other genetically influenced human qualities, it is really not much of a leap to assert that *nothing in human affairs—including much of economic and socio-political behavior—makes sense except in the light of evolution* (Rees, 2009b).

Let me be clear. I am not arguing “genetic determinism” or that other factors do not contribute to humanity’s unsustainability dilemma. Rather, I am asserting that our perception of the problem will remain unintelligibly incomplete, and our capacity to “deal” with it will be severely constrained, unless we factor in the bioevolutionary contribution.⁴ If innate tendencies, including denial (Pratarelli & Aragon, 2008), play a significant role in human eco-economic behavior and we do not acknowledge their existence, we will not be able successfully to manage them. As cyberneticist Stafford Beer (1981) observed, “We cannot regulate our interaction with any aspect of reality that our model of reality does not include.”⁵

It is also important to underscore that an inherited tendency or genetic predisposition is, by definition, not an inevitability. Rather, it is a *propensity* that is likely to play out in the absence of countervailing circumstances such as moral codes, cultural taboos, legal prohibitions, or other social inhibitors. For example, humans are not naturally monogamous. Many cultures have therefore invented both social and material signals (e.g., elaborate ceremonies and wedding rings) to advertise marital unions and inhibit extramarital sexual activity for the sake of community stability. The point is that even partial control of

innate behaviors requires, first, that we acknowledge and raise them to consciousness so that they can, in fact, be included in “our model of reality” for “regulatory” purposes.

Hypothesis: Humans are Unsustainable by Nature

Ecologists sometimes describe nonhuman species in terms of their reproductive strategies in different types of environments (e.g., Pianka, 1970; Matthews & Kitching, 1984). Unpredictable or unstable environments select for relatively short-lived organisms with small body size, early maturity, high fecundity (capability of producing numerous offspring), and good dispersal abilities. As might be expected, such species are characterized by high juvenile mortality rates and widely fluctuating populations. Because their evolutionary success is dependent on high *potential* population growth rates, such organisms are called r-strategists. Among mammals, small rodents are typically r-selected.

At the other end of the spectrum are so-called K-strategists, organisms usually associated with relatively predictable or stable ecosystems. K-strategists are typically large-bodied, long-lived and late-maturing. They generally have low reproductive and dispersal rates, but also extended parental care and thus high survival rates to maturity. The populations of K-strategists are therefore relatively stable and tend to press up against the fluctuating carrying capacities (K) of their ecosystems. Indeed, they are said to be K-selected, because their individual survival and overall evolutionary success depend on competitive superiority at high population densities under conditions of resource scarcity. Humans are clearly K-strategists, a distinction we share with other large mammals ranging from tapirs through elephants to blue whales.

What has all this to do with consumption, sustainability, and social transformation? I suggest that the failure of the sustainability project to date has much to do with the modern world’s failure to face up to basic facts of human nature. My working hypothesis is that because of certain evolutionary traits, many associated with K selection, modern *H. sapiens* is biased against sustainability. Moreover, humanity’s technological prowess and society’s addiction to continuous material growth reinforce the biological drivers, making the problem particularly intractable. More specifically, I hypothesize that unsustainability is an inevitable emergent property of the systemic interaction between contemporary technoindustrial society and the ecosphere. Both genetic and socio-cultural factors contribute to the conundrum (Rees, 2009b).

⁴ For similar arguments in the context of reforming economics, see Gual & Norgaard (2010) and Waring (2010).

⁵ Beer’s observation recalls Ashby’s (1957) law of requisite variety, which can be stated as follows: The variety (number of possible system states) of an effective regulatory system must be equivalent to the variety of the system it regulates.

The Biological “Presets”

As an evolved species, *H. sapiens* shares basic reproductive and survival traits with all other species. Most importantly, experiments with organisms ranging from bacteria cultured in Petri dishes to reindeer introduced to previously uninhabited islands reveal the following universal properties of life: unless or until constrained by negative feedback (e.g., disease, starvation, self-pollution), all species' populations expand into all accessible habitats and use all available resources (where, in the case of humans, “available” is determined by the state of technology).⁶

Moreover, in the competition for habitat and resources characteristic of K-selected species, natural selection favors those individuals who are most adept at satisfying their short-term selfish needs whether by strictly competitive or through in-group cooperative means (see Pratarelli, 2008).⁷ That is, individuals strongly predisposed to “instant gratification” may enjoy a selective advantage over individuals who are less aggressive in expressing their material demands. Humanity's well-known tendency to discount the future—as incorporated into most economic planning models—has almost certainly evolved by natural selection.

In the course of evolution, humans have had to compete, not only with other people, but also with other consumer species for food and habitat. And who can doubt that humans have prevailed in the competition? *H. sapiens*' capacity for growth and domination “vastly outstrip those of all other species” (Waring, 2010). Is there any sizable patch of habitable landscape on Earth that has not been claimed and occupied by *H. sapiens*? Our species has the greatest geographic range of any ecologically comparable species—we have occupied the entire planet. And imagine the territorial dispute that would ensue if, miraculously, we were to discover some resource-rich continent long lost in the vastness of the Pacific Ocean. It is a safe bet that the conflict would not be over how best to conserve and protect the new find in its pristine state. Consider the international response to disappearing sea ice in the Arctic Ocean. A fully rational species might react with alarm and redoubled efforts to negotiate a climate change-mitigation treaty. Instead, circumpolar nations trip over each other as they compete to claim the newly exposed resource endowment of the ocean floor, including

more of the petroleum and natural gas that are the source of the problem in the first place! (Gamble, 2009).

This is actually the typical human response to any resource trove. Fowler & Hobbs (2003) show that in terms of energy use (and therefore carbon-dioxide emissions), biomass consumption, and various other ecologically significant indicators, human demands on their ecosystems dwarf those of similar species by ten or a hundredfold. Human consumption of biomass, for example, exceeds the upper 95% confidence limits for biomass ingestion by 95 other non-human mammal species by two orders of magnitude. These and related data show that *H. sapiens* has become, directly or indirectly, the dominant macroconsumer in all major terrestrial and accessible marine ecosystems on the planet.⁸ Indeed, our species may well be the most voraciously successful predatory and herbivorous vertebrate ever to walk the Earth (Rees, 2009b).

There is, however, a compound problem. First, despite material abundance, humans' innate competitive drive as K-strategists seems relentless. We do not have a built-in “off” switch that is tripped by sufficiency (see Princen, 2010 in this issue).⁹ Indeed, we habituate to any level of consumption (once a given level is attained, satisfaction quickly diminishes) so the tendency to consume and accumulate ratchets up. This is particularly so if we perceive that another social group—or country—is “getting ahead” faster than we are. Even within wealthy societies, widening income gaps lead to personal frustration and declining population health (Wilkinson, 1996), so efforts to “keep up with the Joneses” continue unabated.

Second, humanity's technological capacity to exploit nature now exceeds nature's regenerative capacity. Even as fish stocks decline, we both invent new fish-finding technologies to chase remaining schools further and deeper and switch to alternative prey species lower in the food web. To reiterate: like other species, humans tend to use up available resources, a trait that is constantly enhanced by evolving technology.

The combined result of these forces is a defining feature of much so-called resource management, particularly common pool assets: “While there is considerable variation in detail, there is remarkable consistency in the history of resource exploitation: resources are inevitably overexploited, often to the

⁶ Deep sea drilling for petroleum is an example of a technology in pursuit of the last deposits of “available” resources. The 2010 blowout at BP's well in the Gulf of Mexico underscores the increasing risk associated with exploitation at the technological frontier.

⁷ Within-group (e.g., family, tribe, or nation) cooperative behavior can increase between-group competitive success.

⁸ Ironically, economists and other technological optimists argue falsely from monetary analyses that the human enterprise is “dematerializing” or “decoupling” from nature.

⁹ It does not help matters that we have “socially constructed” consumerism as our preferred way of life.

point of collapse or extinction” (Ludwig et al. 1993).¹⁰

Sociocultural Reinforcement

Humans are not only biological entities, but also social and cultural beings. Much of the basis for human evolutionary success is thus derived from species attributes that are largely sociocultural in origin. The major means by which the products of “nurture” accumulate include written language and humans’ unmatched capacity for social learning.

It is appropriate at this point to evoke the concept of the “meme” as first introduced by evolutionary biologist Richard Dawkins (1976). A meme is a unit of cultural information that, like a gene, can be passed between generations and that influences the “phenotype”—the outward appearance or expression—of the society concerned. Memes are the basis of cultural inheritance and include persistent beliefs, entrenched assumptions, and prevailing values, as well as scientific concepts and working technologies.

Memes have a significant “evolutionary” advantage over genes in that they can spread horizontally among living individuals in the *same* generation or population. Cultural evolution is therefore much faster than genetic evolution and is actually accelerating (as evidenced by humanity’s ever-accumulating technological toolkit). Clearly, adaptive memes or meme complexes endow *H. sapiens* with a powerful “leg up” in the Darwinian struggle for existence.¹¹

Note that people acquire much of their memetic endowment passively, simply by growing up in a particular culture and being exposed to various social contexts, including school, religious institutions, workplaces, and the family home. The key point is that, once acquired, such “cultural programming” (like genetic programming), asserts considerable, often subconscious, influence over both individual and group behavior (Wexler, 2006).

With this in mind, let us consider a particularly powerful “meme complex” whose effect is to *reinforce* humanity’s K-selected expansionist tendencies. I submit that most of the world today is in the thrall of a grand, socially constructed vision of global development and poverty alleviation centered on unlimited economic expansion fueled by open markets and more liberalized trade (Rees, 2002). This mythic construct springs from the demonstrably flawed assumption that human well-being derives from per-

petual income growth, yet it has shaped and distorted the lives of more people than any other cultural narrative in all of history.¹² It has also lodged itself in the heart of the (un)sustainability conundrum.

Allegiance to perpetual growth has actually taken hold in a remarkably short period of time and is still propagating into the developing world. It is true that previous cultures experienced slow growth and development (ultimately followed by collapse) (Tainter, 1988). But only eight or ten generations of people have experienced sufficient economic growth or related technological change in their lifetimes to notice it, and certainly the fourfold increase in human numbers to six billion in the twentieth century is completely unprecedented. In effect, 99.9% of human history has been no-growth history (see Stutz, 2010 in this issue).

As an *influential* memetic construct, the growth imperative is actually only *two* generations old. It was only in the 1950s that economic growth emerged from nowhere to become the “supreme overriding objective of policy” in many countries around the world (Arndt, 1978).

Again, the problem for sustainability is that the perpetual growth myth knows no ecological bounds. Mainstream academic models of the economy make no functional reference to the ecosystems that contain it. Collateral damage to “the environment” is considered to be a mere “negative externality” that can be corrected by appropriate pricing (e.g., pollution charges or taxes). Resource shortages? No matter—we can relieve local shortages through trade, and should the problem be more widespread, we play the technology card—the expansionist myth asserts that human ingenuity will find a substitute for any depleting resource. As the late Julian Simon (1995) was fond of stating:

Technology exists now to produce in virtually inexhaustible quantities just about all the products made by nature...We have in our hands now...the technology to feed, clothe and supply energy to an ever-growing population for the next seven billion years.

Simon’s assertion is so arithmetically challenged that it should be dismissed out of hand.¹³ Neverthe-

¹⁰ Not only do people deplete *real* natural resources, they create *virtual* resources—bank loans and credit cards for example—and use these to capacity as well.

¹¹ A “meme complex” is an internally consistent set of conceptually related, mutually reinforcing memes.

¹² There is actually a second layer of nature-nurture interaction at play here. Humans are genetically predisposed to storytelling. The social construction of (perceived) reality, including disciplinary paradigms, political ideologies, and cultural myths is a universal property of human societies (Grant, 1998). While the tendency to mythmaking is yet another vessel cast from our genes, what we put into it is determined by sociocultural context.

¹³ When challenged on this statement, Simon backed down, stating that the text should have read “for the next seven million years,” a

less, true believers in the expansionist myth have helped boost the human enterprise beyond long-term global carrying capacity.

Beyond Carrying Capacity: The Ecofootprints of Technoexuberance

Evidence for humanity's culturally amplified success as a K-strategist is clearly revealed by ecological footprint analysis (EFA) (Wackernagel & Rees, 1996; Rees, 2006; 2008; WWF, 2008). The EFA is based on material consumption and waste production. For any specified population, EFA estimates the exclusive area of productive land and water ecosystems required to produce the resources that the population consumes and to assimilate some of its wastes.

Since consumption reflects income, national per capita ecofootprints are strongly correlated with gross domestic product (GDP) per capita. Thus, the citizens of rich countries need in the range of four to ten global average hectares (gha) (10 to 25 acres) *per capita* to support their lifestyles while the poor get by on less than half a hectare (one acre). The EFA thus graphically translates socioeconomic inequity into biophysical terms.

Ecofootprinting is a uniquely powerful sustainability indicator. Unlike monetary measures such as GDP per capita that have no theoretical limits, ecofootprints can be compared to finite supplies. For example, EFA shows that densely-populated rich countries such as the UK, the Netherlands, Germany, and Japan have ecofootprints several times larger than their domestic productive land-water areas. Even the much more sparsely populated United States is living beyond its ecological means (see WWF, 2008). All such countries have long exceeded their domestic carrying capacities and are running *ecological deficits* with the rest of the world—poor countries, relatively low-density countries like Canada, and the global commons.

Most critically, the global average citizen has an ecofootprint of about 2.7 gha, while there are only about two hectares of bioproductive land/water per capita on Earth (WWF, 2008). In other words, the total human ecofootprint already exceeds global human carrying capacity by over 30%. Humanity is in a state of “overshoot” living, in part, by depleting ac-

cumulated stocks of “natural capital” (e.g., fish, forests, and soil) and degrading critical ecosystems.¹⁴

These data reveal the dangerous futility of the world's present growth-based approach to global “development,” especially poverty alleviation. The consumer lifestyles of the wealthy cannot be extended sustainably to the poor using currently available technologies (see Stutz, 2010 in this issue). To sustain just the present world population at North American, material standards (EF = 9.2 gha) would require the equivalent of three to four additional Earth-like planets (and we have yet to account for the additional 2.5 billion people expected by midcentury). By depleting natural capital and eroding life-support systems, continued material growth undermines the future of global civilization.

Reason, Emotion, and Instinct: Understanding the Triune Brain

So far, I have argued that human behavior is influenced by subconscious predispositions. However, this does not explain why *H. sapiens*' defining intelligence (i.e., the capacity for abstract reasoning, for logical thought processes) seems to play so small a role in our collective response to escalating global change. Here, I suggest that at least part of the reason resides in the incomplete evolution of human consciousness—*H. sapiens* is very much a work in progress.

Consider an evolutionary vector that begins with totally subconscious, autonomic, or instinctive behavior and leads ultimately to actions based all but entirely on conscious awareness, logical analysis, and free will. Humans like to think that we have arrived at the *free will* end of this spectrum, but much of modern cognitive science suggests that this is largely illusion. Psychologist Robert Pevsner argues from the available evidence that the starting assumption in behavioral psychology should be “that consciousness doesn't play a role in human behavior. This is the conservative position that makes the fewest assumptions” (cited in Buchanan, 2007).

The material basis for the gradient of consciousness is that most complex of evolved organs, the human brain. Neurologist Paul MacLean (1990) argues that the human brain has actually evolved in at least three broadly overlapping phases, each with its own anatomical subcomponent having distinct functions, memory, and “intelligence.” MacLean refers to the three quasi-independent structures of the human brain as the reptilian or R-complex (the brainstem and ce-

major concession indeed. Even so, physicist Albert Bartlett (1998) showed that, starting from the 1995 population of 5.7 billion people, growing at just 1% per year, the human population after “only” seven million years would be 2.3×10^{30410} . This is an unimaginably large number, something like “thirty-thousand orders of magnitude larger than the number of atoms estimated to be in the known universe!”

¹⁴ Eventually, of course, remaining biocapacity will be insufficient to support prevailing population and consumption levels, so the entire system must decline or crash.

Box 1 Elements and functions of the “Triune Brain” (MacLean, 1990).

- The *reptilian complex* is concerned with autonomic functions associated with the body's physical survival (e.g., circulation and breathing). It also influences instinctive social behavior (e.g., pertaining to territoriality, social stature, mating and dominance, and other qualities subject to K-selection), executes the fight or flight response, and controls other mainly hard-wired ritualistic or instinctive behaviors.
- The *limbic system* is the primary seat of emotions (e.g., happiness, sorrow, pleasure, pain), personal identity and related behavioral responses (e.g., sexual behavior, play, emotional bonding, separation calls, fighting, fleeing). It also houses our affective (emotion-charged) memories and seems to be the seat of value judgments and informed intuition.
- The *neocortex*, or “rational brain,” is the most evolutionarily recent, but occupies over two-thirds of the human brain by volume. The neocortex is responsible for the higher cognitive functions that distinguish humans from other mammals; it is the seat of consciousness and the locus of abstract thought, reason, and logic. It makes us uniquely capable of moral judgment and forward planning. The neocortex also facilitates language, speech, and writing and, with these, the very possibility of civilization.

rebellum); the limbic or paleomammalian system; and the neocortex or neomammalian brain. These three sub-brains are concerned with basic survival instincts, emotions/value judgments, and conscious logical reasoning respectively (see Box 1). While some critics argue that MacLean's model oversimplifies the evolution and anatomy of the human brain, neurological research supports his general theory (Panksepp, 1998; Ellis et al. 2009).

Whatever the human brain's evolutionary details, and however localized its macrofunctions might be, the healthy brain generally acts as an integrated whole—the various components that express instinct, emotion, and reason are intricately interconnected, each continuously influencing the others (e.g., emotion stimulates thought and thinking may trigger emotion). This means that the individual's emergent behavior and overall personality is the blended product of diverse thoughts, emotions, and instincts. Critically, however, there will periodically be circumstances in which one of the sub-brains, with its distinct capacities and limitations, assumes dominance—and the individual involved may not be fully aware of what part of the brain is in control.

This last point is particularly important in the context of (un)sustainability. Humans think of themselves as exemplars of conscious self-awareness—after all, we “live” in consciousness conferred by the human neocortex. It seems, however, that we greatly overestimate the role of mindful intelligence while remaining paradoxically unaware of unconscious

influences over individual and group behavior that spring from the lower brain centers. Intelligence and reason may not be the primary determinants of human behavior at any social scale. Indeed, the circumstances in which reason and logic dominate our actions may actually be quite limited and their effect relatively trivial in the grand evolutionary context.

The situation implies that much of expressed human behavior, from routine one-on-one social interaction to international political posturing, is shaped, at least in part, by subconscious mental processes and their associated chemical/hormonal agents. These subconscious processes include the innate propensities that qualify *H. sapiens* as a dogged K-strategist in the competition for resources and habitat. The problem for sustainability is that “[b]iological drives...can be pernicious to rational decision-making in certain circumstances by creating an overriding bias against objective facts” (Damasio, 1994).

Everyone is aware from personal experience that passion will trump reason in shaping one's responses to emotionally charged or life-threatening encounters. Indeed, we often do foolish or regrettable things simply to enhance our social status or maintain our self-esteem. Most importantly, in situations of conflict or resource scarcity—situations that will become increasingly frequent and severe in the international arena—basic survival-oriented bio-behavioral predispositions that operate beneath consciousness (i.e., in the limbic system and reptilian brain stem) may well override rational thought processes. This tendency may be particularly evident among political leaders. In addition to being innately loyal to their tribes and psychologically hard-wired to their political ideologies, politicians may be more than usually enslaved to brainstem-based survival instincts, particularly the deep-seated need to retain their wealth, prestige, and political power.

The key point is that *humanity is a deeply conflicted species*. We are torn, on the one hand, between what reason and moral judgment say we should do and what pure emotion and baser instincts compel us to do, particularly in stressful circumstances. As Damasio (1994) explains, “There are indeed potions in our own bodies and brains capable of forcing on us behaviors that we may or may not be able to suppress by strong resolution.” The neocortex, the seat of reason and logic, is a relatively late arrival on the evolutionary stage and does not always play a commanding role. In this light, it would be folly to assume that either individuals or society, especially *global* society, will necessarily deal rationally with evidence for accelerating global ecological change.

Toward Resolution: Can Humanity Become Sustainable?

[For humanity to survive the sustainability crisis] we must rely on highly-evolved genetically-based biological mechanisms, as well as on suprainstinctual survival strategies that have developed in society, are transmitted by culture, and require for their application, consciousness, reasoned deliberation and willpower (Damasio, 1994).

H. sapiens is clearly the highly successful product of millions of years of K-selection, but evidence is mounting that something has gone awry. Ironically, it is precisely humanity's evolutionary success that has generated our current unsustainable state. The innate behavioral traits that assured the competitive supremacy and long-term survival of primitive peoples—e.g., the tendency to act on short-term individual (and tribal) self-interest, to discount the future, and to adhere to successful mythic constructs—have become maladaptive on a finite planet in the much changed circumstances *created by the expanding human enterprise itself*. Matters are complicated by the fact that our dominant cultural narrative, the growth-based progress myth, reinforces our now disadvantageous behavioral predispositions.

Human societies have always coexisted, indeed, coevolved with the ecosystems that sustain them (Gual & Norgaard, 2010). But human population growth, increasing material demands, and negative technological impacts are now conspiring in ways that reduce the “fitness” of industrialized countries and, indeed, of our increasingly integrated global socioecosystem. A concise Darwinian portent of the potential outcome is that *both bad genes and inappropriate memes may well be “selected out” by the rapidly changing ecosphere*.

Many thoughtful people do understand our biophysical circumstances, appreciate the ravages of inequity, acknowledge wealthy countries' ethical responsibility to the poor, and agree that the problem cannot be solved through material growth. However, humanity's collective response is not consistent with either our best science or the moral imperative. As noted at the outset, most sustainability campaigns, corporate responses, and government policies emphasize “simple and painless” (read “marginal and ineffective”) actions that require only modest adjustments to personal lifestyles and none at all to the economic growth ethic or other key beliefs, values, and assumptions of technoindustrial society (Thøgersen & Crompton, 2009). Green consumerism may make people feel good, but it is still consumerism and its modest gains are nullified by the Jevons

effect. Meanwhile, the world community is doing nothing significant to address inequity directly. According to Pratarelli & Aragon (2008), whenever there is clear acknowledgment of a dire problem, yet no volition to address it, we witness a “form of universal human behavior we will label denial or self-deception.”

The inevitable result in the present context is an accelerating global growth dynamic whose benefits and costs are grossly inequitably distributed. The rich get predictably richer while billions of people—half the human family—remain malnourished and materially deprived. Meanwhile, resource consumption and waste production *per capita* are still rising (even in the richest and most efficient wealthy economies), ecosystems are collapsing, and the income gap is still widening. It is increasingly plausible that the total social costs of growth (many of which go unaccounted) now exceed the measurable benefits. If so, the world has entered an era of uneconomic growth, growth that impoverishes (see Daly, 1999; Siegel, 2006).

Can We Reframe the Future?

[M]an today is in flight from thinking.
—Martin Heidegger, 2003 [1955]

The much-hyped quest for sustainability has failed to date in part because the global community is in collective denial of reality.¹⁵ Assuming our best science is correct, the only certain way to address poverty while avoiding irreversible overshoot and “irretrievably mutilating” our planetary home is to rejig the growth machine and to implement a world program for income/wealth redistribution. Some movement toward income equalization is necessary because, apart from being morally reprehensible, gross income disparity will eventually lead to social unrest—possibly geopolitical chaos—thus making the achievement of ecosustainability impossible.

This is not entirely a novel proposal. As early as 1993, a workshop report by the Business Council for Sustainable Development (now the World Business Council for Sustainable Development) concluded that “[i]ndustrialised world reductions in material throughput, energy use, and environmental degradation of over 90% will be required by 2040 to meet the needs of a growing world population fairly within the planet's ecological means” (BCSD, 1993) (note the

¹⁵ Hundreds of well-funded “climate-change denial” and other contrarian organizations and websites have emerged in recent years, swelling the ranks of those unwilling to accept the basic science. However, this is only part of the denial—even those who accept climate change resist making necessary changes.

concessions to both gross carrying capacity and global equity). Similarly, mainstream climate scientists agree that the world should be aiming for a 50%-80% reduction in carbon-dioxide emissions below 1990 levels by 2050 to avoid dangerous climate change. One recent study specifically argues that to avoid reaching a catastrophic greenhouse-gas level of 650 parts per million by volume of carbon-dioxide equivalents (ppmv CO₂e), the affluent nations will soon have to begin decarbonizing at the “draconian” rate of 6% per year, likely requiring a “planned economic recession” (Anderson & Bows, 2008). Finally, ecological footprint studies suggest that if North Americans were serious about achieving global sustainability they would be planning to reduce their ecological footprints by 77% (from 9.2 gha to their equitable Earth share of 2.1 gha). All such measures would ease pressures on the ecosphere while creating the “ecological space” required for justifiable growth in the developing world (Rees, 2008).

Fortunately, tools are available to ease the transition should we muster the will to attempt it. For example, with the right incentives, available technology could enable an 80% reduction in energy and (some) forms of material consumption without substantially affecting standards of living (von Weizsäcker et al. 2010). Even more important, it is increasingly clear that the present material standards of high-income countries may actually not be worth defending. Evidence is growing that greater income/consumption no longer contributes to objective indicators of population health or to subjective well-being in affluent countries (Myers & Diener, 1995; Lane, 2000; Siegel, 2006). Indeed, with the right policies, wealthy countries could make the necessary deep cuts in material and energy use in ways that would actually *enhance* their citizens' quality of life (Siegel, 2006; Victor, 2008; Jackson 2009).¹⁶ Existing policies that privilege the wealthy and increase inequity, even in rich countries, actually undermine population health and felt well-being (Wilkinson, 1996; Wilkinson & Pickett, 2009).

It is commonly argued that in every crisis is opportunity. The (un)sustainability crisis thus provides the world community with the unique privilege of intentionally scripting a new, ecologically adaptive, economically viable, and socially equitable cultural

narrative (see Wilk, 2010 in this issue). The rate of biological evolution may be fixed, but there is nothing to prevent us from assuming conscious control over the pace—and content—of cultural evolution.

Certainly, we have reached a crucial juncture in human evolutionary history. On a crowded planet facing an ecological crisis and overstocked with nuclear weapons, *short-term individual and “tribal” interests have all but converged with humanity's long-term collective interests*. Ecological and social selection pressures have thus dramatically shifted. In today's tinderbox world, genes and ideology that effectively urge “every man for himself!” might well mean destruction for all. In these circumstances, long-term selective advantage may well have shifted to genes and memes that reinforce cooperative behavior, even mutual altruism.¹⁷

Fortuitously (and although they are completely ignored by mainstream economic theory), other-regarding emotions such as compassion, empathy, love, and altruism are key components of the human behavioral repertoire (Manner & Gowdy, 2010). The central question is whether we can muster the national and international political will required purposefully to create a set of “memetic mutations” that reinforce these natural “other-regarding” feelings (both for other people and other species). A useful analogy underscores the potential here. The field of “epigenetics” recognizes that particular qualities of the biophysical environment can enhance or suppress the phenotypic expression of various gene functions without affecting the underlying DNA sequencing (see Qiu, 2006; Talbott, 2010). Similarly, qualities of the sociocultural environment (e.g., various forms of peer pressure) can encourage the expression of desirable social behaviors and suppress those that have become situationally maladaptive. In present circumstances, the global community should therefore consciously exploit the potential of *social* epigenetics as a tool in the quest for sustainability. It is time to create or reinforce cultural memes that can put the potential of social engineering to beneficial use.¹⁸

¹⁷ There is a counter view. It holds that some people—most likely among the rich and militarily powerful—would survive any human-induced apocalypse. Should this argument prevail, ancient self-interested intelligence of the reptilian complex and limbic system will have won out (but it will not be a pretty sight).

¹⁸ A program of planned social engineering will seem repugnant to some people. However, we should recognize that all forms of socialization are, in effect, “social engineering,” including today's misplaced affection for the market as the primary instrument of social and economic policy. Note, too, that for several decades the fields of public relations and advertising have deliberately used “the social construction of reality” to create the consumer culture, to convert active citizens into passive consuming cogs that serve the industrial machine. In short, the present generation represents the largest and arguably most successful experiment in social engineering ever conducted.

¹⁶ We need comprehensive programs involving tax and related fiscal incentives to induce the development and use of more efficient technologies and encourage greater investment in public infrastructure. These measures would be combined with social programs for greater income equity, shared work, shorter work weeks, enhanced leisure, and investment in social capital (as a substitute for personal consumption). The overall goal would be both to increase economic security and to create greater ecological stability.

Survival 2100

In a more rational world, political leaders faced with today's problems would probably assemble in a special forum specifically to renounce the failing global growth paradigm and to formally declare the need for a worldwide "Survival 2100" project. They might even acknowledge the complex origins of maladaptive intergroup behaviors that have long been the bane of civilization (the twentieth century was the bloodiest in history). Humanity must specifically confront once-adaptive genetic predispositions that have become hazardous on a crowded planet and abandon the socially constructed memes that reinforce them.

It is true that people can be individualistic, unfeeling, and selfish. But, as noted above, they are also capable of social engagement, compassion, and generosity of spirit. While the former qualities reflect the dumber instincts of primitive K-strategists, the latter must come to prevail in support of collective survival in an ecologically full world. Again, the key is to recognize that while all these colors can be found in the full spectrum of human behavior, *society can make deliberate choices about which tints and shadings to emphasize* in the creation of its cultural narratives.

Certainly, achieving ecological stability and economic security for all will require unprecedented heights of international cooperation in service of the common good. To reduce the human ecofootprint, the fetishistic emphasis in free-market capitalist societies on individualism, competition, greed, and accumulation must be replaced by a renewed sense of community, cooperative relationships, generosity, and a sense of sufficiency; short-term material wants must give way to long-term basic needs.

"Survival 2100" would thus explicitly acknowledge the myopic futility of a global "development" model based on perpetual growth on a finite planet. We need an economy oriented toward greater material equity and true development (getting qualitatively better) rather than efficiency and mere untar-getted growth (getting quantitatively bigger). The ultimate goal would be the creation of a dynamic, more equitable steady-state economy serving the entire human family within the means of nature.¹⁹

The absolute reduction of material and energy consumption globally would obviously be a critical material objective of "Survival 2100." (As noted

above, this will involve "contraction" by the wealthy to free up the biocapacity—resource stocks and waste sinks—required to support morally justifiable material growth in poor countries.) However, reduced gross energy and material throughput is, in itself, insufficient for sustainability. "Survival 2100" would also emphasize global population reduction. No other action program would generate higher returns for the planet per dollar invested. The ecosphere simply could not sustain increasing material standards for the poor if world population continues to increase.

How would the program be implemented? It should already be obvious that "Survival 2100" would require a variety of new transnational institutions, including treaties and accords designed to reduce the population, reverse ecological decline, restore essential natural capital stocks, regulate trade, and generally create the framework for a global steady-state economy. It will also need new agencies to implement, monitor, and enforce these yet to be written treaties.

Success in "Survival 2100" could put the human enterprise and nature—the global socioecosystem—on a new, adaptive, mutually beneficial coevolutionary path. However, there are plenty of thorns and potholes along the way. The required unprecedented level of mutual trust among nations and the loss of some national sovereignty represents two such major stumbling blocks.²⁰ Consider, too, the difficulty associated with just one probably necessary sustainability tool—a global system of ecological tax reform (e.g., global carbon taxation or "cap-and-trade" scheme for various critical resources) designed to ensure the true cost pricing of ecologically significant goods and services. Unsustainability may be the greatest example of market failure, but corrective measures that involve significant government intervention in the economy would undoubtedly provoke strident resistance from a world "socially engineered" to worship the market god and to view government—particularly international government—as the devil incarnate.

Inevitable Pushback

Indeed, it would be naïve to think that any attempt to articulate a new sustainability-oriented cultural narrative would not be met by strenuous pushback. We have already shown how reluctant society is to respond consistently to evidence that the world is on a collision course with biophysical reality. Few people opt for "voluntarily simplicity" or decline unnecessary salary increases; unions rarely bargain for decreased wages and benefits. "Contraction" is

¹⁹ "Steady-state" implies a more or less constant rate of energy and material throughput compatible with the productive and assimilative capacities of the ecosphere (Daly, 1991). However, this does not imply stagnation. Scientific progress and artistic endeavors would be unaffected and some economic sectors would be growing and developing even as obsolete "sunset" industries are being phased out.

²⁰ Conceivably, global goals and national targets could be set by transnational accord but implemented by individual nation states. This might overcome some of the objection to loss of sovereignty.

simply not a narrative that resonates with the times. On the contrary, most people are psychologically committed to continuous economic growth, the illusion of ever-increasing material prosperity, and the myth of progress (see Princen, 2010 in this issue). Powerful and privileged elites, those with the greatest personal stake in the status quo, control the policy levers that are steering us onto the ecological rocks.

The means by which people become so deeply committed to particular beliefs has only recently been revealed. Neurobiologists and cognitive scientists are showing that cultural norms, beliefs, and values can effectively be imprinted on the human brain (Wexler, 2006). (A mechanism for social epigenetics?) In the normal course of individual development and maturation, repeated social, cultural, and sensory “inputs” actually help to imprint the individual’s synaptic circuitry in neural images of those experiences. Once entrenched, these neural structures alter the individual’s perception of subsequent experiences and information. People tend to seek out experiences that reinforce their preset neural circuitry and to select information from their environment that matches these structures. Conversely, “when faced with information that does not agree with their internal structures, they deny, discredit, reinterpret, or forget that information” (Wexler, 2006) (i.e., denial has a neurological basis).

Clearly, then, restructuring the world will not be a simple matter of applied logic. We witnessed President Barack Obama’s “cap-and-trade” approach to climate change be whittled to ineffectiveness by various special interests in its passage through Congress and then ultimately defeated. The oil industry openly supported “public” protests of the legislation that would limit emissions and require permits to pollute (Krauss & Mouawad, 2009). Worse, some public meetings on healthcare reform in the United States attracted angry opponents openly carrying weapons. Such belligerent and intimidating displays of emotion abolish all logic, destroying the opportunity for the necessary informed discourse on critical social change.²¹

The lesson here is that any attempt to engineer a social transition must confront the fact that humans are naturally behaviorally conservative. We are indeed creatures of habit. Once an individual’s synaptic pathways and associated behaviors are well entrenched, it is difficult for that person to adapt to sig-

nificant changes in either the sociocultural or biophysical environments. To re-establish cognitive consonance between programmed perceptions and new environmental realities requires that the affected parties engage in the willful restructuring of their own neural pathways and associated belief systems. This requires conscious effort and will not always be successful. Even when people accept that such “reprogramming” is necessary, the process can be lengthy, difficult, and unpredictable (Wexler, 2006). That said, the human brain, even when damaged, has proved to be remarkably plastic and responsive to determined effort (e.g., Doidge, 2007).

It seems to boil down to this: Modern society has been paralyzed by deep-seated cognitive dissonance, collective denial, and political inertia in dealing with the unsustainability conundrum. The problem has roots in both innate behaviors and socially constructed beliefs that seem literally to program the brain. What individuals hear and pay attention to (or ignore) can thus be understood only within the context of both social norms and the broader political-economic environment (Norgaard, 2009).

Mere information, including scientific analysis of a problem, is generally not enough to stimulate policy reform or effective action. However, assuming a sufficient level of fear, international agreement on the nature of the problem, general commitment to a collective solution, unprecedented political will, and the creative engagement of modern communication technologies, the world community could theoretically *choose* to educate the next generation from scratch in a whole new sociocultural paradigm for survival. This new narrative is essential to override humanity’s now maladaptive expansionist tendencies and to enhance other behaviors and predispositions regarding our present cultural fitness. It is even conceivable that cooperative action at the highest levels through something like the “Survival 2100” project would inscribe the new narrative on the resistant psyches of the present generation. Arguably, success in this endeavor is the only way to bring global sustainability within our grasp.

Of course, for the many reasons presented earlier in this article, there is only an infinitesimal probability that anything like “Survival 2100” will actually be initiated. Nevertheless, the effort to bring it forth is worth the potential reward. By achieving a planned sustainability, humanity, that wondrous “work in progress,” would gain an opportunity to pull itself up another rung on the bioevolutionary ladder, one in which collaborative, reasoned intelligence plays a larger role in moderating maladaptive emotion and instinct.

²¹ In August, 2009, a colleague informed me that during his presentation to a healthcare forum in the United States “a local contractor shouted his readiness to shoot the President. He threatened to beat me. No one recoiled in horror. Another defeated political candidate instructed me that this was ‘free speech.’ These symptoms are being manifest everywhere in the country” (Mikulecky, 2009).

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ARTICLE

Sustainable consumption and the problem of resilience

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The twenty-first century is likely to witness increased levels of weather-related disasters, droughts, epidemics, food shortages, habitat destruction, and resource conflicts. Those environmental and systemic problems will be mediated and exacerbated by potential economic dislocations, including job losses, financial crises, and commodity-price increases. As a result, the problem of resilience will increasingly permeate the politics and policies of sustainability transitions. Using a comparative analysis of two American households located at opposite ends of the income pyramid, this article explores the issue of how to think about the relationship between sustainable consumption and resilience. Although the two goals can be configured as a tradeoff, the discussion suggests how policies might address them in a synergistic way.

KEYWORDS: households, socioeconomics, income, environmental impact

Introduction

The study of sustainable consumption can be explored at a range of scales, from the global to the continental to the household. Although a full analysis of the research problem would require attention to all scales, this study focuses on the most basic level of human social organization, the household. One of the challenges of encouraging more sustainable consumption patterns at this level is that acute environmental, political, and economic instability encourages households to worry less about reducing their ecological footprint and more about having the resilience to withstand potential socioeconomic and ecological shocks. To date, scholars of sustainable consumption have not thought carefully about the problem of resilience. Doing so may make it possible to design more effective policies.

Because the topic of resilience and sustainable consumption is not yet well studied, a theoretical and qualitative approach is appropriate. The first two sections of this article are theoretical, and the third section provides a qualitative analysis of two cases at different ends of the income pyramid as a basis for further conceptualization. The purpose is to establish a framework for thinking about the relationship between resilience and sustainable household consumption and for generating hypotheses for future research and possible new policy interventions.

Sustainable Consumption and Resilience

In policy documents at both the international and European Union level, sustainable consumption is frequently defined as

[T]he use of services and related products which respond to basic needs and bring a better quality of life while minimizing the use of natural resources and toxic materials as well as the emissions of waste and pollutants over the life cycle of the service or product so as not to jeopardize the needs of future generations (EEA, 2005; for a review of the literature, see Cohen & Murphy, 2001; Jackson, 2006).

The definition echoes the Brundtland Commission's general approach to sustainable development, which also emphasized intergenerational distributional issues (WCED, 1987). Although the definition is helpful as far as it goes, there are ways that the study of resilience may improve some of the thinking behind it.

One general line of criticism of the intergenerational emphasis of the European and United Nations studies is that the work implicitly downplays intragenerational equity. Although the Brundtland Report itself is in the European social democratic tradition and does raise some issues of intragenerational equity, the definition of sustainable consumption above does not (although it does not preclude consideration of those issues). Because the general resilience of a

household with respect to external shocks is related to household income, debt, and wealth, the study of resilience can help advance thinking about the relationships between equity and sustainable consumption.

A second aspect of the definition is that the term “minimizing” leaves open the distinction between increases in efficiency and reductions in overall consumption. The greening of a household’s consumption through energy-efficient appliances, buildings, and vehicles can coincide with an overall increase in the household’s consumption as measured by a carbon footprint or some other metric. For example, if a household purchase of an energy-efficient product results in a net savings of household expenditures, it is possible for a rebound effect to occur by which the household actually increases its ecological footprint by spending the savings on a more energy-intensive product or activity (Herring, 2009). As a result, studies of sustainable consumption should also pay attention to differences between increased efficiency in consumption and reduction of consumption. Strategies for accomplishing the latter can include shifting household consumption from energy-consuming objects to leisure activities with a low ecological footprint (such as bicycling, meditation, and gardening) or by reducing household incomes, such as by changing the terms of globalization to increase prices that have been kept artificially low or by decreasing the number of hours worked in the average household (Schor, 1998; 2005a; 2005b). However, the study of resilience may be helpful because it draws attention to new ideas for reducing consumption other than through lower income and increased leisure. For example, one might also channel disposable income into savings, provided that the investments that result from the accumulation do not generate their own rebound effects (see also Cohen, 2007).

Before developing a framework for studying the relationship between resilient and sustainable consumption, it is helpful to review the notion of resilience in general and resilient consumption in particular. The concept of resilience is widely used across a range of disciplines, including engineering (Hollnagel et al. 2006), security policy (Peters, 2008; Cascio, 2009), corporate strategy (Sheffi, 2005), and socioecological systems (Berkes et al. 2002; Walker et al. 2004; Fiksel, 2006). A common ground among most definitions of resilience is the capacity of a system to maintain essential functions when faced with perturbations, threats, or disasters. Concepts associated with resilience that are derived from formal approaches include nonlinearity, adaptive cycles, multiple scales (panarchy), adaptability, and transformability (Resilience Alliance, 2009). For human systems, the discussion of resilience and sustainabil-

ity has focused on the problem of resource dependency (Adger, 2000) and the management of place-based ecosystems (e.g., Berkes et al. 2002). There is also some work on the relationships among sustainability, urban design, and resilience (Newman et al. 2009).

For present purposes, household resilience implies the creation of reserves to protect against socioeconomic and ecological shocks. The definition is intended to build on the general work on resilience and also to retain some flexibility for the integration of socioeconomic and environmental issues. Within this broad definition, at least two major types of household resilience can be identified: economic and material. In areas of the world where household provisioning is agrarian and subsistence-based, the problem of resilience is visceral in the form of threats posed by material environmental risks such as drought and flooding. For the world’s urbanized populations, the problem of environmental risk is less direct, but even those households face environmental risks due to extreme weather events such as hurricanes, blizzards, ice storms, tornados, and floods. More generally, environmental degradation and climate change are mediated through markets and the economic system, and households are also concerned with other forms of economic risk such as job loss, inflation on basic commodities, energy-supply disruptions, and health-care expenses. The environmental and economic risks, and the more general ignorance or lack of knowledge about other possible unknown dangers, create the conditions for a household’s concern with consumption that enhances resilience. Resilience-oriented consumption (or what will be termed here “resilient consumption”) may potentially undermine sustainable consumption, but it may also be configured to enhance it as well.

To understand the relationship between resilient consumption and sustainable consumption, two main types of resilient consumption must first be distinguished. The economic type can be enhanced through two mechanisms: diversifying revenue streams and increasing household levels of economic storage (e.g., savings, insurance, and education). With respect to the first mechanism, since the 1960s an increasing number of households in the United States has shifted from a single-income stream to two or more incomes. Commonly, both spouses have entered the workforce, but sometimes a breadwinner takes more than one job. One motivation for developing multiple income streams is to increase the economic resilience of a household, and in some ways resilience is increased. For example, if one breadwinner loses a job, the household may be able to tide itself over by using the ongoing income from the other revenue streams. Having two or more incomes

therefore functions as a kind of economic reserve, provided that the household retains the flexibility to cut expenses in the event of a job loss.

The proviso is at the heart of an alternative view of multiple income streams and resilience. Warren & Warren Tyagi (2003) suggest that having two workers in a family can create other problems, because expenses can be ratcheted up and locked in. Although income is increased, so are household expenditures for items such as food preparation, an additional car, home repairs, and child care. Although Warren & Warren Tyagi do not use the concept of resilience explicitly, they suggest that two incomes may reduce flexibility in at least two ways. First, as many of us have experienced, there is often a problem of scrambling for “coverage” when a child or elderly member of the family is sick and both parents are working. Second, they assume that an adult in the household who is not in the labor force may be able to find a job if there is a crisis, and the potential constitutes a kind of resilience. As a result, an argument can be made that having a two-income household reduces resilience, although the argument applies best to two working spouses and less to the general strategy of multiple income streams.

Cohen’s (2010) macroeconomic perspective on sustainable consumption suggests a way of resolving the crosscurrents of multiple income streams with respect to resilience. When there is high job insecurity (such as during an economic recession), an adult who is not in the labor force may not be able to find a job quickly, especially one that pays well. Hence, under conditions that have become increasingly prevalent in the United States, the preferred form of resilience may be to have at least two income streams at all times. The preference may be stronger if the breadwinners are able to find full-time jobs with benefits; these prize jobs are worth hanging on to. I would add that having more than two income streams (such as from investments or from one person who works two jobs) would also increase resilience. Thus, whereas there may be a tendency for a two-income trap for two breadwinners, the tendency is much reduced for two incomes for one breadwinner or three or more incomes for two breadwinners. However, the use of multiple income streams to increase resilience works best if the marginal income can be channeled into debt reduction and increased savings, or at least into expenditures that can be reduced quickly in the event of the loss of one of the income streams. Thus, the liquidity of income potential (the capacity to find another job) and of expenditures (the capacity to cut expenditures rapidly because they are not locked in), rather than the number of working spouses, is the underlying condition that determines the relationship between multiple income streams and household re-

silience. Economic resilience is enhanced when both forms of liquidity are high.

A second mechanism within economic resilience is to increase economic storage, that is, by increasing savings, reducing debt, purchasing more insurance, or investing in education. Education and training are included as forms of economic storage because increases in human capital tend to increase income liquidity. Of course, the capacity to increase storage depends on the relationship between household income and expenses; thus, this mechanism is closely tied to economic resilience. There is ample evidence that during the Great Recession that followed the financial crisis of 2007–2008 households have increased savings and decreased some consumer expenditures in order to enhance their economic resilience. In other words, economic insecurity leads to heightened concerns about economic resilience, which in turn leads to more economic storage.

A second type of household resilience is to develop physical back-up systems. One might think of this form of resilience as the material-storage counterpart of economic storage. The list here is potentially quite long: generators, a battery back-up on sump pumps, water-filtration devices, a fireplace or wood-burning stove for additional heating, household wind and solar energy, space heaters for an interruption in oil or natural gas heating, additional vehicles, bicycles, car-sharing memberships, food storage, gardens, and a second home (and, for survivalists, a “refuge”). This strategy of resilience may involve some very moderate precautions, as indicated in the second case discussed below. However, the “back-up” systems strategy can also involve unconventional approaches associated with countercultural movements. The latter includes modest guides to increasing household self-reliance and home power (e.g., Szykita, 2009), dystopian science fiction about post-carbon collapse (Kunstler, 2009), and the world of survivalist groups (Rawles, 2010).

Having reviewed the concepts of sustainable consumption and household resilience, I can now suggest how the two might be articulated. As a preliminary hypothesis, the effects of concern with economic resilience on sustainable consumption will be mixed. The economic security of multiple income streams may result in higher levels of household consumption of “greener” or more efficient products, but the overall level of the household’s consumption may rise due to the increased income. For example, the higher-income household may be able to afford costly green premium products (such as organic food), but it may increase overall consumption by purchasing more prepared foods, going to restaurants, using a second car, and contracting for child care and other services. However, if the marginal revenue

from the multiple income streams is channeled into savings and other forms of economic storage, then the effects will be the opposite: the preference to increase savings will decrease the demand for green products (at least more expensive ones such as organic food), but it will also decrease overall levels of consumption. In contrast, a household with one adult who stays at home and accepts a lower income may be able to engage in gardening, cooking, and home repair, and those activities may reduce the overall ecological footprint by substituting in-home labor for outside services, such as by avoiding the use of a day-care service and by purchasing less overall.

The relationship between material resilience and sustainable consumption is also not straightforward. On the one hand, some of the back-up systems may involve activities associated with household greening and the diversion of leisure time into low-carbon activities, such as adding rooftop solar and insulation. On the other hand, some activities may entail adding energy sources that generate greenhouse-gas emissions, such as gasoline-powered generators, wood-fired stoves, and additional vehicles. However, the additions have complicated ecological implications in comparison with foregone household expenditures. Because storage systems such as a generator may be used infrequently, the overall ecological footprint of purchasing such equipment might be lower than if the household were to spend the same funds on consumer electronic devices or carbon-intensive vacations.

To summarize the argument to this point, the household goal of resilient consumption is likely to interact with the goal of sustainable consumption, sometimes in positive and sometimes in negative ways. Resilience may appear to conflict with sustainable consumption, but there are also ways in which the two can be brought into alignment.

Household Inequality and Consumption

A second benefit from adopting the perspective of resilience for the study of sustainable household consumption is that it enables one to theorize better the changing environmental and social context in which sustainable consumption policies are being designed. To the extent that environmental, economic, and other dangers increase, or perceptions of them increase, it is likely that resilient consumption will become increasingly salient. Thus, in addition to the first proposition (that resilient and sustainable consumption have a complicated interaction that is sometimes positive and sometimes negative), a second proposition should also be considered: there is a general historical trend of increasing economic and environmental instability that will make those interactions stronger over time. The second proposition

has implications for how one conceptualizes sustainability policies.

In European policy documents on sustainable consumption, such as “Household Consumption and the Environment,” the general approach is to articulate policies that could increase levels of sustainable household consumption (EEA, 2005; see also EEA, 2008; OECD, 2008). The policies generally include changing the signals for pricing, such as for the household consumption of water and electricity; providing attractive alternatives, such as improved public transportation; and making available educational and voluntary approaches, such as product labeling. The policies are all quite valuable as far as they go, but they are formulated without great attention to the problem of inequality and household debt. Because financial pressures on households (at least in the United States, but in many other countries as well) are increasing, the problem of resilience tends to push the issue of inequality more toward the center of sustainable consumption studies.

As many households have discovered during the Great Recession, a high level of debt creates low economic resilience that can lead to bankruptcy and other adverse financial outcomes. Yet, the trend for American households over the past four decades, at least until the Great Recession, has been an increase in the level of debt (Warren & Warren Tyagi, 2003; Cohen, 2010). In the United States, total household debt in 1970 was US\$500 billion, or 50% of gross domestic product (GDP), whereas in 2007 it was US\$13.8 trillion, or 100% of GDP (Foster & Magdoff, 2009; Federal Reserve Statistical Release, 2010). There are various explanations of the rising level (including conspicuous consumption and predatory lending), but this section will focus on two long-term macroeconomic trends in the United States that are particularly relevant to household-level resilience.

One factor behind the long-term rise in household debt is wage stagnation. In the United States, the average hourly wage for a nonsupervisory, private-sector employee has been unchanged for decades. In 1964, the first year tracked in this set of government statistics, the wage was the equivalent of US\$17.57 per hour in 2008 dollars, whereas in 2008 the wage had only increased to US\$18.08 (United States Bureau of Labor Statistics, 2009). For households that earned the much lower minimum wage, the real minimum wage peaked in 1968 (Kalwarski, 2009). In short, at the lower end of the income pyramid, there has been either stagnation or decline in real wages, despite the fact that real GDP increased significantly (Working Life, 2004; United States Census Bureau, 2007; Foster & Magdoff, 2009). There are also signs that even households with significant education and

professional status are facing similar challenges. As Nan Mooney (2008) has argued, using case studies, even many professional, middle-class families with advanced education have not been able to achieve the standard of living of their working-class parents. Many people who would like to have a permanent, full-time job with benefits have been forced into the “permanent temporary workforce” (Coy et al. 2010). To some degree, the decision of a household to develop multiple income streams has represented a temporary reprieve from the problem, but as Warren & Warren Tyagi (2003) suggest, that strategy is also associated with higher household expenditures (such as an additional car, day care, and home services) that can wash out the gains from the additional income stream.

Even as wages have stagnated (or, depending on which lower-income quintile is used as a point of reference, increased modestly), households have been squeezed by a second long-term trend: the decline in purchasing power for crucial items (Warren & Warren Tyagi, 2003). For example, whereas the price of gasoline in 1964 was about US\$0.30 per gallon (about US\$2.08 in 2008 dollars), the price of gasoline in some places in the United States peaked at US\$4.00 per gallon in 2008 before declining, after the Great Recession reduced demand, to about US\$3.00 in 2010. The price of an average home in 1964 was about US\$19,600, or about US\$137,000 in 2008 dollars, whereas the price of an average home in 2008 had climbed to US\$290,000 (Economag, 2009). Furthermore, health-care benefits have increasingly been cut or subjected to limitations, larger deductions from pay checks, and patient copayments. Moreover, the economic basket of what constitutes an essential household item has increased due to technological change. In short, the prices of some basic commodities and crucial large-ticket items have outpaced the increase in wages, at least for households in the lower-income brackets and located in areas of the country where real estate prices have exceeded inflation.

One might argue that the focus on increasing wage-price pressure is overstated because households today have more material possessions than those of the 1960s. The counterargument may be valid in terms of some measures of material objects or even average home size, but one needs to take into account several mitigating factors. First, the higher levels of household possessions (such as a second car) may be essential for maintaining a second income stream, and they may be counteracted by higher expenditures on services needed to back up the second income stream (such as child care). Second, because the higher levels of material possession are accompanied by increased debt, a gross measure of physical pos-

Table 1 United States income by quintile, 2007.

Households	Number (Thousands)	Income: Lower Limit (US\$)	Income: Upper Limit (US\$)
Top 5%	5,839	177,000	--
Highest Fifth	23,357	100,000	--
Fourth Fifth	23,357	62,000	100,000
Middle Fifth	23,357	39,100	62,000
Second Fifth	23,357	20,300	39,100
Lowest Fifth	23,357	0	20,300

Source: United States Census Bureau, 2008

sessions is not a good way to measure a household's economic resilience, especially when the measure does not disaggregate across income levels. Finally, because household goods depreciate over time and are not very liquid, the accumulation of most household items does not increase resilience.

Although households in the upper two quintiles of income may escape some of the worst effects of the wage-price squeeze, the stagnation of wages and increase of real prices for some essential household items create severe pressure on households in the lower three income quintiles. The statistics on household income in the United States in 2007 indicate that 60% earned less than US\$62,000, and 40% earned less than US\$40,000 (Table 1). The “forty-under-forty” statistic includes many single-person households, but even for those individuals after-tax income is necessarily focused on basic expenses such as housing, utilities, food, and transportation. Given the pinched financial circumstances of those households, it is not surprising that debt has grown.

Other than the work of Cohen (2007; 2010), most research on sustainable consumption has not taken into account the relationship between household-level sustainable consumption and macro-economic changes in the global financial system, including increased debt. Rising levels of consumer debt probably have mixed effects on sustainable consumption. Increased debt may decrease a household's ability to invest in new, more efficient or greener forms of household consumption, but it may result in lower overall household consumption. As with households that downshift by reducing the number of hours worked for increased leisure, there is simply less money available for purchasing items. In other words, there is an ecological silver lining to the clouds of economic decline. But the general point is that a perspective on resilience enables a more complete approach to the problem of how to make consumption more sustainable.

Case Studies

To explore the complicated interactions of household inequality, resilient consumption, and sustainable consumption, two case studies are presented. The use of qualitative methods is appropriate because the primary goal is to uncover possible patterns that have not yet been made visible in the literature and subsequently to generate hypotheses for future research. Although one might use two hypothetical cases, the ones presented below are based on actual households. They were selected to accomplish two goals. First, the two households provide a picture of household-level decision making at two extremes of the income pyramid in the United States. Household A is located in the lower quintile of the pyramid and Household B is located at the lower end of the upper quintile. Second, the two cases provide a picture of the interaction of resilience concerns with sustainability concerns in households already working toward sustainable consumption.

The extent to which the households are typical of the income quintile is analyzed, but the selection of the households is not intended to be representative. The goal rather is to explore how resilient and sustainable consumption interact at income extremes. The point of the comparative analysis is not to test hypotheses as much as to generate them with a qualitative and exploratory method that is essentially ethnographic. In an ethnographic approach, one uses a detailed exploration of a case, within the constraints of an article's length, to provide insights into a general issue. As a result, the representativeness of the case is not as important as the capacity of the detailed analysis to reveal new patterns and generate hypotheses. To test hypotheses, a different study design with quantitative methods would be necessary.

Household A

Household A is a single person who lives on a limited graduate-student fellowship in a one-bedroom apartment located near a university in upstate New York. There is a minor second income stream from

occasional part-time work. The household is typical in some ways, because many lower-quintile households are either young or elderly people living on their own, but atypical because the person has potential for mobility into higher income quintiles over the life course. The estimated carbon footprint for the household is 18 tons per year, compared with a national average of 27 tons for a one-person household. Carbon is calculated based on a questionnaire that measures energy-related household consumption, including building efficiency and transportation (Nature Conservancy, 2010). The household does not use air conditioning due to the cool climate, and the person does not own a car or travel much. Here, there is already an insight into how resilient and sustainable consumption may interact. The person has made an investment in resilience (increased education), and the investment has corresponded with a decline in overall consumption (including for comforts such as air conditioning and automobiles), at least in the short term.

Expenditures were reviewed based on a record of purchases for one year, and then broken down into broad categories. The figures were compared with those of Paulin (2008), who studied expenditure patterns of young single households between 1984-85 and 2004-2005. (His figures include a substantial "other" category that is not included in the table.) Paulin's data show that households in the later time period spent more money on education and housing and less on food, clothing, and travel than households during the 1984-85 period. The increased education expenditures could be interpreted as an increased concern with resilience due to employment insecurity. The households in the 2004-2005 period also spent more on food consumed at home and less on food eaten away from home. The categories for Household A do not match up exactly with those of Paulin for either time period, but they are roughly comparable (Table 2).

The significant difference between Household A's expenses and those of the comparison households is the relatively high amount of money spent on rent, which reflects the cost of living in a neighborhood

Table 2 Household expenditures of one lower-quintile, single household.

Area of Expenditure	Household A	Population Average 1984-1985	Population Average 2004-2005
Rent and utilities	50%	23.5 %	31.9%
Food (at home and away from home)	21%	15.5%	13.3%
Travel and transportation	10%	22.5%	18.3%
Telephone and cable	8%	5.4% (entertainment)	5.0%
Clothing	7% (and durables)	6.2% (and services)	3.3% (and services)
Insurance	3%	Other	Other
Health	1%	2.0%	2.1%
Education	0%	4.2%	7.7%

Source: Columns 3 and 4 (Paulin, 2008)

Table 3 Sustainable consumption from an affordability perspective.

Category	Affordable Expense	Luxury Expense
Housing, home energy	Weatherization, lower temperature	Green pricing for electricity service
Food and home supplies	Gardening, conventional food in farmers' markets	Organic (either local or industrial), fair trade
Travel	Staycations, regional bus	Distant air travel
Transportation	Walking, public transportation, ride sharing	Fuel-efficient car rental or car-sharing for trips that require an automobile
Household goods (appliances, clothing, and furniture)	Some reused, inexpensive efficient products (light bulbs)	New "natural products" and energy-efficient appliances

located within walking distance to the university. The proximity to campus enabled savings on transportation because the individual was able to forgo a car and used public transportation when necessary. Travel was also reduced both in amount and by using intercity buses, rather than air transportation, for most trips out of town. If one adds up the "rent and utilities" line and the "travel and transportation" line, the expenditures of Household A (60%) are somewhat closer to those of the more average household (about 50%). The comparison also suggests one expense-neutral "sustainability" move: to convince people to trade higher rent for walking or biking distance to work. The move might also be interpreted as increasing resilience, because the household reduces reliance on a car for commuting.

The resilience concern of this person was primarily economic rather than material. In other words, this person was not very worried about developing material back-up systems (such as a generator) because the provision of electricity was largely the landlord's responsibility. However, the individual was very concerned with not going more deeply into debt. Under this situation of low income and high concern with economic resilience, the opportunities for this low-income renter to engage in more sustainable consumption were restricted. The person was already spending the limited income mostly on food, clothing, shelter, and rudimentary insurance. Clothing and electronic goods were a small portion of the overall budget (7%) and deemed necessary. Likewise, furniture and books were limited to necessities and purchased used. There was little room to cut overall consumption, while any shift toward purchasing more expensive green products, such as organic food, was not feasible.

With respect to the building and energy, my review of the carbon-footprint calculators for the Northeast indicates that building-related energy expenditures are the greatest contributor to carbon emissions (e.g., Nature Conservancy, 2010). One change that might increase economic resilience and potentially decrease carbon emissions would be to move into a house with a cooperative living arrangement. Assuming that the person does not move, there

is not much motivation to invest in home improvements other than temporary weatherization of windows and doors in the winter or to lower the room temperature. With respect to food, the person purchased conventionally mainly at grocery stores, so an opportunity for greening was passed up due to convenience and expense. There is some evidence that food at farmers' markets is less expensive than its equivalent in grocery stores, so a low-income household might shift some consumption to local food on affordability grounds. However, the additional price premium for organic or fair trade is a barrier, so the change would likely be from conventional distant food to conventional local food. Perhaps the greatest sustainability shift had already occurred: from an automobile to walking, a form of transportation that, for the healthy, is also more resilient.

For a person in this situation, one can derive a set of sustainable consumption transitions that would be perceived as relatively affordable and unaffordable (Table 3). The only attractive sustainability propositions to this household would be shifts that also reduce household expenditures. The benefit of this analysis is that it initiates a discussion of what sustainable consumption could mean when policy makers put themselves in the shoes of low-income renters with high concerns for economic resilience.

The following hypotheses for the interaction of resilient and sustainable consumption emerge from the analysis of Household A:

- A household may trade off housing and transportation costs by paying for more expensive housing located closer to work, thereby increasing resilience (by not relying on mechanical transportation) and increasing sustainability (by walking or biking to work).
- A household may increase resilience by investing in education, which leads to overall levels of reduced consumption (in the short term) due to expenditures, time constraints, and foregone income (although the effects of higher income could lead to long-term increases in consumption).

Table 4 Household expenditures of larger budget items of an upper quintile household.

Expenditure Item	Population Lowest Quintile	Population Highest Quintile	Sample High- Quintile Household
Housing (Shelter)	24.2%	19.5%	23%
Housing (Utilities)	10.2%	5.3%	7%
Food, home supplies, alcohol, personal care, reading	18.6%	14.3%	31%
Transportation	15.8%	16.4%	4%
Insurance and pensions	2.7%	14.5%	4% (insurance only)
Health	7.2%	4.4%	6%
Home furnishings and equipment	3.2%	4.2%	6%
Apparel and services	3.7%	4.0%	1% (adults)
Entertainment	4.5%	6.1%	--
Education	3.0%	2.6%	--
Children	--	--	12%

Source: Columns 1 and 2 (United States Bureau of Labor Statistics, 2007)

- A low-income household has a correspondingly low “affordability barrier” for sustainable consumption that is heavily governed by economic resilience. In other words, only a small subcategory of green or energy-efficient products is attractive, mostly ones that provide immediate cost reductions.

Household B

Household B is a relatively affluent family household consisting of a husband, wife, and two children who live in a single-family, three-bedroom home, also in upstate New York. Unlike Household A, Household B is not concerned with resilience in the form of debt reduction. The household has a small balance remaining on its mortgage with no other debts. Instead, its focus is on building savings in retirement and other accounts. Household B has some concerns with the quality of its multiple income streams. One parent has a full-time position with benefits, and the other left such a job when the children were small and currently has two part-time positions, which provide high levels of flexibility for juggling schedules. However, there is concern with another kind of “two-income trap,” that this parent may not be able to find a full-time job with benefits when the children approach college age.

Again, statistics were gathered for one year of expenditures for Household B, and then broken into broad categories. In Table 4, the household is compared with national average figures from the United States Bureau of Labor Statistics (2007). The categories are not exactly comparable, because Household B used a budget category of “children.” However, the categories of “children” and “adult apparel” (about 13% when added together) are roughly equivalent to the government categories of “education,” “entertainment,” and “apparel and services” (also about 13% for the upper quintile home). The most obvious differences between Household B’s expenditures and

those of the comparison group are the lower automobile budgets and higher food budget. Household B has small, fuel-efficient vehicles that are paid off, and its relatively high food budget reflects a purchasing strategy focused on organic foods, occasional grass-fed meat, and premium dietary supplements that are viewed both as an environmental choice and as an investment in future health. Here, “future health” emerges as a category of resilience. Home equipment, furnishings, and repair were sometimes channeled into energy-efficient improvements when deferred maintenance issues did not take precedence.

To get a better sense of what sustainable consumption means in the case of this lower-upper quintile household, a breakdown of some examples is given (Table 5). Notice that some aspects of sustainable consumption that appear in the lower-quintile household (purchases in the reuse sector, walking and public transportation, and bus travel for vacations) have disappeared or been greatly reduced, whereas some aspects that were too expensive for the lower-income household (such as organic food) have been integrated into the household expenditures.

Although wealthy in comparison with the lower-quintile household discussed above, Household B nevertheless hits another affordability barrier with respect to greening. To understand the barrier, consider the category of food and home supplies. The household has made a transition to organic food (and local organic when it is in season), and some of the cleaning products that are most associated with toxicity risk have been replaced with natural brands. However, the non-food consumable items represent a breaking point in the transition, largely because of the relationship between health benefit and the price premium. For example, a 32-load container of laundry detergent (natural, nontoxic brand) was priced at US\$11.50 at the natural foods retail cooperative where the family shops, about double the price of a conventional brand available at discount stores. The

Table 5 Upper-quintile household incomplete transition.

Category	Affordable expense	Luxury expense
Food and home supplies	Mostly organic food, some fair trade food	Organic or green home products (detergents, napkins)
Household goods (appliances, clothing, furniture)	Energy-efficient appliances	Organic clothing and natural furniture
Housing, energy	Green electricity, weatherization, lower temperature, zone heating	Geothermal, rooftop solar, new windows, new siding
Transportation	Fuel-efficient new cars	Hybrid or electric vehicles
Travel	Short trips, staycations	Green tourism

huge price premium, high level of use, relatively nontoxic nature of the conventional brand, and lack of ingestion of the item were all factors in a decision to buy this item neither from the locally owned cooperative nor from the small, natural products manufacturer.

Similar barriers to a more complete transition can be found in other areas of household consumption. With respect to household goods, Household B has made a transition to energy-efficient appliances but not to organic clothing and natural furniture. With respect to housing and energy efficiency, the household has opted for the optional green pricing program for electricity powered by wind energy, partly because the price premium was low (a few dollars per month) and the transition was easy. In addition, various energy-efficiency measures have been introduced (such as two-zone heating), but the more expensive transitions (such as an investment in all new windows and solar panels) have remained out of reach. With respect to transportation, the household has two fuel-efficient conventional cars, and a decision was made not to purchase a family van due largely to cost and secondarily to environmental concerns. The family decided not to invest in hybrid automobiles due to the high price premium and relatively small difference in fuel efficiency in comparison with the small cars. Public transportation and ride sharing are technically possible but logistically highly inconvenient for a busy household with children and working parents. Finally, with respect to travel, vacations are mostly regional and by family car, although there is occasional air travel.

In summary, even the upper-income household hits an affordability barrier where additional expenditures that would reduce its environmental impact are viewed as imprudent because they would exceed the annual budget. Funds for investment in new household technologies would have to be taken from savings, which would reduce economic resilience. The trade off is of particular interest because it is a household with a high awareness of sustainable consumption and of the various options available. However, the categories in the right column of Table 5 are largely considered to be in financial reach only if the

household income were to move more deeply into the upper quintile. Although the table identifies an affordability barrier for Household B, it was (like a production possibility frontier) shifted outward in comparison with respect to Household A.

Regarding economic resilience, the family has multiple income streams, very low debt, and substantial savings and insurance. However, in 2008 the household became much more aware of the need to enhance material resilience. A freakish ice storm left the home and surrounding neighborhoods without power for five days. As a result, the household shifted investment in the house itself away from sustainability considerations to material resilience goals. In 2009, Household B invested in a dozen electric space heaters in the event of a supply shortage for natural gas or a breakdown of the boiler, and it purchased a power-transfer system for a generator to run the boiler, refrigerator, and one additional circuit. Household B also has plans to purchase a battery-powered backup for the sump pumps and a gasoline-powered generator. The expenditures took priority over continued investments in weatherization and insulation, at least in the short term. Furthermore, whereas the household was previously enthusiastic about electric-powered vehicles as a possible future purchase, it is now weighing the trade off involved in having yet another system dependent on electricity. During the ice storm, the gasoline-powered automobile enabled the family to find food, wood, candles, and other supplies at stores located outside the disaster area.

In comparison with Household A, overall consumption has increased. There are more material possessions in the household (even on a per capita basis), and Household B also owns and uses automobiles. Nevertheless, the house is small and generally does not require air conditioning in the summer, and the family generally does not fly for vacations. Because of those choices, the household only generates 57 tons of carbon dioxide per year, compared with 110 tons for the United States average for this type of household. As a result, the per capita carbon footprint is slightly lower than that of Household A, even though Household B uses automobiles.

The following hypotheses emerge about the interaction of resilient and sustainable consumption for an upper-income household:

- Household resilience includes investments in health via food, supplements, organic food, exercise clubs, and health services. Those investments may be more energy efficient than alternative forms of household consumption. Reframing some forms of green consumption as “health resilience” issues may make them more attractive.
- As incomes increase, economic resilience involves substantial concern with savings and insurance. Although diverting resources may reduce immediate household consumption, the broader environmental impacts depend on how that money is invested. As a result, sustainable consumption research and policies need to include household-investment patterns as well.
- Even an upper-income household faces an affordability barrier with respect to voluntary options for increased sustainable consumption, but it is more likely than a low-income household to invest in energy-efficient options with a medium- or long-term return on investment. Policies that reduce that affordability barrier, but lead to middle-term gains, such as property-assessed clean-energy bonds or on-bill financing of building retrofits, may be very attractive to moderate and upper-income households.
- Due to higher levels of home ownership associated with the higher income, upper-income households will have an increased concern with material resilience (such as generators and other back-up systems). Those expenditures may compete with more direct forms of sustainable consumption that involve energy conservation, such as weatherization or energy-efficient appliances.

Conclusion

The primary conclusion of this study is that the issue of resilience is important enough that the analysis of sustainable consumption should take it into account, at least at the household level examined here. To do so productively, one must conceptualize the relationship between resilient and sustainable consumption as a complex interaction in which any single area of household consumption may involve tradeoffs or synergies between resilience and sustainability. Furthermore, because concern with resilience is very sensitive to differences among households by income, wealth, and debt, those issues need to be brought to the forefront of sustainable consumption theory. Recognition of the complexity of

the relationships will be central for the design of policies that are intended to increase sustainable consumption but are also acceptable to consumers who face growing levels of concern with resilience.

The analysis of two households with a high concern for sustainability but very different economic positions has resulted in some hypotheses about how resilient and sustainable consumption might interact, and how those two types of consumption also may interact with inequality. By shifting the boundaries of the conceptualization of sustainable consumption theory, it may be possible to design more effective policies. To some degree the issue may be one of framing, that is, of positioning voluntary sustainable consumption shifts as also affording increased resilience, which in turn is differentially configured by household income and wealth. The potential policy implications are as follows: at the lower levels of the income pyramid, public policies for voluntary forms of increased sustainable consumption could become more effective if they were to provide educational programs that point to opportunities where households can be green and immediately reduce expenditures. The opportunities come primarily in the area of reuse (e.g., purchasing second-hand materials for clothing and home supplies), energy-reduction interventions with low cost and short-term returns (temporary winter weatherization and lowering the household temperature), local food (which may be cheaper than supermarket food when one compares organic-to-organic or conventional-to-conventional), and various ways to save on transportation (such as moving closer to work or investing in car-sharing programs and other forms of alternative automobility) (Cohen, 2006). For upper-income households, the challenge may be more to think of ways that link consumption of green products with health (a long-term resilience concern), middle-term economic returns (energy-efficiency investments), household savings and insurance, and concerns with material resilience.

Assuming that policies can be designed that motivate increases in sustainable consumption and also address household concerns with resilience, one runs the risk of a household-level rebound effect. One very interesting solution to the problem that sustainable consumption researchers have considered is to establish policies that encourage environmentally ameliorative or low-impact leisure activities. Those are very interesting possibilities, but analysis of resilience suggests additional options. A resilient household can withstand both economic and environmental disturbances without undergoing financial collapse or evacuation. Savings, insurance, and additional education are the most obvious economic vehicles for household-level resilience, and as one can see from

Table 4, there is evidence that households shift to investment, insurance, and related forms of “consumption” when there is more disposable income. Thus, policies that encourage economic storage may help households to avoid the rebound effect. They may also directly reduce overall expenditures and contribute to sustainable consumption.

However, a second-order problem emerges from the “savings and insurance” solution to the household-rebound effect. Even if savings and insurance can be utilized as a mechanism for avoiding a household-rebound effect, there could be negative implications for aggregate levels of sustainable consumption depending on how the savings and other economic reserves are ultimately reinvested. If the revenue is invested globally in companies that increase fossil-fuel consumption or even spur the culture of consumerism, then there may be a second-order rebound effect (an investment-rebound effect). In other words, the positive effects on household consumption due to diversion of expenditures into savings and insurance may be overwhelmed by the negative effects of secondary investment of those funds. The perhaps counterintuitive conclusion is that sustainable consumption policies need to be broadened to include household investment. To avoid the second-order rebound effect, it is important that the financial vehicles available to the household savings include options that channel the investment into financial products that do not have negative implications for overall levels of sustainability. Examples include green funds for retirement-investment vehicles as well as a variety of new financial instruments being offered from banks and credit unions (e.g., targeted deposits that the financial institution invests in solar energy or from which it donates some profits to local environmental organizations).

The concept of resilience as including not only economic but also material reserves also suggests the potential for additional tax incentives for investments in material reserves. The policies would be most attractive for upper-income households. Examples include incentives for households that have invested in a power-transfer switch, generator, electric battery-powered sump pumps, wood-stove back-up systems, distributed renewable energy, and energy storage for solar panels. Some of the incentives exist already, but the analysis of household-level resilience suggests a broader incentive spectrum than those currently available for weatherization, energy-efficient appliances, and distributed renewable energy. Even a fossil-fuel generating investment such as a generator or back-up wood-fired stove may be broadly beneficial, provided that it is used rarely, saves resources for households and governments in the event of a disaster, and channels rebound-effect savings away

from other consumer expenditures and investments that reduce sustainability.

At a higher level of scale than the household, there are some other, perhaps counterintuitive implications of thinking about sustainability and resilience together. For example, having distributed energy systems (such as rooftop solar) that use the smart grid as a bank for energy savings and withdrawals is less resilient than a system that stores excess electricity via hydrogen or batteries located on site, because a grid failure would affect many buildings. Combining both systems would be even more resilient, but there would be additional economic and environmental costs. Likewise, a bus-based public transportation system with multiple fuel sources (diesel, biodiesel, natural gas, and electricity for downtown circulators) is more resilient than a system that is heavily reliant on rail and powered by electricity, but it might be less sustainable in terms of conventional metrics such as greenhouse-gas emissions. Having a food production and delivery system that includes access to distant food sources as well as a vibrant local system of farms, community gardens, private gardens, and farmers’ markets is more resilient than one based solely on either local or global supply chains. (This issue gets into the food-miles controversy, but it does so from the perspective of resilience rather than just carbon footprints.) Likewise, a financial system based on banks that are too small to affect the system when they fail rather than too big to fail is also likely to be more resilient. Here, concepts such as “global localism” may provide a source of inspiration for the design of systems and policies that avoid survivalist retreatism but increase the resilience of cities and regions (Hess, 2009).

As the environmental crises deepen, it is possible that governments will react in increasingly proactive ways to avert the worst catastrophes by developing comprehensive sustainability policies. However, to date the pace of intervention on global warming, resource depletion, toxic exposure, and habitat destruction has not been rapid enough to stave off further degradation. As a result, it seems increasingly likely that the twenty-first and twenty-second centuries will have increasing incidences of drought, flooding, epidemics, food shortages, homelessness, contamination, weather-related disasters, warfare, and crime. The problems will only magnify economic crises that have emerged from the financialization of the global economic system, which may be a long-term phenomenon. Although the escalating environmental and economic problems will rest most severely on the shoulders of poor people living in coastal regions of developing countries, the effects are likely to spill over into all countries. As a result, even for households in wealthy countries, issues of resilience will

increasingly become interwoven with those of sustainability, and the policies for sustainable consumption as well as for the sustainable design of buildings and large technical systems, will increasingly need to take resilience into account.

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ARTICLE

Consumption embedded in culture and language: implications for finding sustainability

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In this article I ask how deeply consumer culture has become embedded in contemporary American society. I suggest that we need to begin with greater conceptual clarity, particularly on terms that are part of the very phenomenon we are trying to study—consumption and freedom, for example. Metaphor theory helps to distinguish between folk concepts and analytical categories as a basis for understanding why consumption is so central, so deeply embedded in fundamental concepts of family, gender, individualism, ethnicity, and nationality. It also helps reveal inconsistencies in environmentalists' ideas about freedom, individual action, and the role of the state in regulating consumption. The article concludes with the deliberately provocative argument that “sustainable consumption” is not the best way to phrase or frame the goals of reducing the amount of energy and materials used and wasted in the United States.

KEYWORDS: resource consumption, social behavior, language, ethnography, world problems, communication, ecosystem sustainability

Introduction

There are a number of obstacles in translating academic research and theoretical insights into practical recommendations for policy and effective messages for public and educational purposes. The ways trained scientists and social scientists think about problems are often far from the ways the same issues appear in public discourse. The current case in point is global climate change, where much of the public, and many of their political representatives, do not understand or accept the clear scientific consensus. Why is there such a gulf between popular (folk) knowledge of the world and the more formal models used in professional analysis? Of course, there are issues of complexity and barriers to communication, as well as the public influence of powerful corporate and private interests. But are there more fundamental differences which reflect alternate modes of thought and comprehension? If our goal is to turn good science into effective public policy for urgent matters like climate change, then this communication problem is of central importance.

One of the more productive approaches to understanding the relationship between folk and analytical concepts has been work in cognitive linguistics that falls under the general term of “metaphor theory” (Lakoff & Johnson, 1980; Lakoff, 1987; Kronenfeld, 2008). At its most general level, metaphor theory proposes that human beings think prelogically and metaphorically, and that intellectual comprehension

is grounded in bodily experience (Lakoff & Johnson, 1999). More specifically, in each individual culture, particular metaphors structure the understanding of worldly phenomena, to the point where people rationalize or do not even perceive objects, behaviors, thoughts, and actions that do not fit metaphorical structures. Different metaphors of the same phenomenon can compete in the same culture, and people often use more than one set of folk categories, just as they can learn to speak and think in different languages.

Metaphor theory says that the world as perceived by individuals does not consist of carefully defined categories of objects and phenomena, with discreet lists of qualities and characteristics following a platonic ideal. Instead, the categories of thought are fuzzy sets, with *prototypes* at their center, each consisting of an image of an action or object that has all of the category's essential qualities. At the center of the category of “dog” lies a generalized image, so all other members of the set are more or less doglike, and the transition to other categories like coyotes or foxes is gradual rather than categorical. Most tellingly, for the purpose of thinking about consumption, the members of a category are not necessarily related to one another at all—they are bound together by their common relationship to the prototype.

The meaningful world therefore consists of categories of things and actions bound together in ways that seem completely natural to members of that culture and are rarely questioned. The concepts are made

tangible through a metaphorical linkage to objects with which people have direct physical experience, so they *feel* the rightness of their perception as much as they think it. At the same time, to a person from another culture, or in an external and “objective” analytical standpoint, that same set looks arbitrary and could be reconfigured in other ways that would make equal or greater sense.¹

Ethnography is the practice that allows us to learn the folk categories of another culture or group, the starting point for comparative analysis aimed at finding more general principles following the practice of theory building in social science. Much of the “science vs. postmodernism” conflict in anthropology and other social sciences over the last decades has revolved around whether or not this comparative “scientific” approach is really just another “western” *folk model*, a conceit by a privileged class that hides its own worldview behind the shield of science. From the point of view of metaphor theory, the conflict is not so clear-cut, because while there are many formal modes of logical analyses through mathematics, statistics, modeling, and probability, in the end the results are always communicated through metaphor, and they acquire their power in the world through their linguistic framing. McCloskey (1985) makes this point extensively and convincingly in work on the use of metaphor and other rhetorical tools in economics. This means that in the practice of social science, folk and analytical categories are always closely connected and even intertwined (see Princen, 2010 in this issue).

Bruno Latour (e.g., 1996) has been perhaps the most effective ethnographer of technology policy, showing how firmly “policy options,” categories of legitimate agents, and expected physical outcomes are determined by the folk categories of the technoscientific world. In addition, studies of the cultural specificity of mechanical technicians (Dorsey, 1995), medical administrators (Bowker & Starr, 1999), and genetic laboratory scientists (Rabinow, 1997) tell us that it is impossible to communicate social research findings directly into effective policy recommendations. The best we can do is to first understand the limitations of our own abilities when it comes to our research and the discourse of the other specialists we work with, and *then* to research and understand how our *audience* thinks, so we can communicate our findings in convincing and accurate ways. We might

study, for example, how economists think about consumer desires as a natural force like gravity. We may want to suggest that it might take the application of “energy” to “move consumption in another direction.” Or we may suggest better metaphors to get our message across, for example, to use the word “wish” instead of “demand” when we talk about what motivates consumers in the marketplace.

George Lakoff has played a major part in bringing the tools of cognitive linguistics to the task of persuasive policy with his work on “framing.”² He argues that the way a public policy debate is framed—the vocabulary and metaphors used to lay out the terms and stakes—tends to predetermine the outcome. Once the issue of terrorism and violence is successfully defined as a “war on terror,” the only question is which side you support. If social scientists simply accept the metaphors created and used by expert communities, public opinion, news media, and politicians, they will be reduced to mechanically supporting one position or another, unable to do effective analytical work that truly informs policy and opens up new possibilities. This trap includes questioning the way the “climate-change community” has framed causes and problems; these might very well be ineffective frames for useful action. If we follow this logic, it is worth asking if the “problem of overconsumption” is best framed as a choice between freedom and restraint or discipline, equity and inequality, the individual versus the common good.

Consumption

After this long prologue, it should not be any surprise that I believe that *consumption* is a folk category with a specific history, rather than a rigorously defined analytical term.³ The category of consumption includes many disparate activities, some of which are environmentally destructive, while others are benign or even necessary parts of the cycles of nature. The way we use the word consumption in both popular and academic parlance is essentially metaphorical; it is a fuzzy set without clear boundaries, the members of the set are not clearly related to one another, and they are all related to central prototypes. The term consumption allows us to map *abstract* concepts and categories onto common concrete

¹ Unfortunately, metaphor theory as originally defined has tended toward a static analysis, just like previous forms of structuralism. We are still working our way toward an understanding of how systems of metaphor constantly change, and here I will depend on the concept of “reframing” as formulated in Lakoff’s recent applied work through his Rockridge Institute, which is devoted to progressive political change.

² Lakoff was a major strategist and advisor for the Democratic National Committee from 2006–2008. His work on politics includes the popular books “Don’t Think of an Elephant,” “Thinking Points,” and “Whose Freedom.”

³ I discuss the metaphorical nature of consumption at greater length in a previous article on which I have drawn from here (Wilk, 2004). I have also written previously about why metaphorical thinking leads easily to moral judgments about over- and underconsumption (Wilk, 2001).

and physical experiences. Consumption is also what Lakoff calls a “graded category,” in that some things strike us as better examples of consumption than others. One scholar trying to define consumption says, “plants consume carbon, animals consume plants” (Borgmann, 2000), but the transformation of carbon through photosynthesis seems much less like consumption than cows eating grass. Why?

The basic metaphor in many Indo-European languages for consumption has a prototype of “fire.” We therefore expect consumption to involve destruction, like a fire burning, that liberates needed energy and produces worthless (and generally dirty) waste. Some kinds of everyday consumption fit this metaphor very well, particularly those having to do with industrial processes that transform energy and resources into consumer products, and activities like purchasing, using, and throwing away consumer products that have short use-lives, like razor blades. Something is “used up” and in the process we realize some tangible benefit and have to deal with the resulting byproducts. But what about the consumption of services? Or objects that are curated for long periods—like furniture, houses, or landscaping—gaining value over time and leaving no trace? The burning metaphor also starts to break down when we try to apply it to full commodity chains, where waste from one process becomes an input to another, where substances mix and have complex lives, so it is hard to determine what is really being “used up.” This is why attempts to account for the “annual consumption” of average Americans have such an arbitrary flavor. Nevertheless, the power of the “consumption as fire” metaphor is that it leads us to assume that consumption is a linear process, during which a valuable substance produces a tangible benefit to the “consumer,” leaving behind some form of waste.

In physical reality there is a huge difference between a natural fire that renews a grassland in the spring and a destructive forest fire set by land developers who want to turn rainforest into pasture for cattle. Both are “consumption,” but one is part of a natural cycle of renewal, and the other creates a grazing area that may take a thousand years to regenerate into forest. Eating an apple grown in your backyard and listening to an mp3 music file are both forms of “consumption,” but it is objectively difficult to identify what the two actions have in common, so it is hard to see how any single measure could be used to compare the “impact” of the two.

A second important metaphorical construction of consumption is “eating,” which can be seen as a subset of “fire” in the sense that envisions the body as “burning” food to produce energy. The immediate bodily nature of the process of eating makes it a powerful and rich source of metaphors for many of the

processes we call consumption. The stages of eating—hunger, finding food, purchasing, preparing, eating, digesting, and excreting—all have metaphorical analogues. So more generally, the desire for consumer goods becomes a kind of hunger, a physical need that if left unsatisfied leads to privation and starvation, or it can also be indulged as a serious pleasure, a frivolous entertainment, or out-of-control gluttony with dire physical and social consequences.

The metaphorical equivalence of shopping with hunting and gathering draws our attention to the skill, taste, and decisions of the shopper as the prototypical activities of consumption. Yet factually, most of our purchasing behavior has nothing to do with choice—it results from locked-in and long-term decisions and takes the form of dribbles of money spent incrementally on utilities and credit, often by institutions (or social groups like families) instead of individuals (Sanne, 2002). The powerful eating metaphor, nevertheless, constantly persuades us to think of consumption as a kind of eating that can be controlled, like appetite and where disorders are revealed as starvation or gluttony.⁴

From the perspective of policy, the metaphorical construction of consumption as eating leads to a failure of focus on one hand and a moralistic approach to problems on the other. The lack of sharpness results from the fuzzy, graded nature of the category, so it becomes difficult to distinguish the kinds of activities that have serious environmental consequences (e.g., driving a car) from those that are relatively benign (e.g., collecting antique cars). It also makes it hard for us to focus on activities that use huge amounts of resources and have terrible impact, but do not easily fit into the metaphorical category of consumption. Sport, political rallies, research, and investing, for example, are activities that consume many resources, but they do not match any of the stages of the “consumption-as-eating” metaphor and receive much less scrutiny for this reason.

The moral opprobrium that emerges in discussions of eating leads to metaphorical constructions of the problems of consumption in terms of weakness and strength, good and bad decisions, when the actual use of resources is often beyond individual control. In the absence of strong evidence, a simple message to “consume less” may make metaphorical sense, but, as many authors have pointed out, individual decisions to consume less (in the limited “eating” sense) often have perverse effects such as increased consumption, rebound effects, and higher prices.

⁴ The “appetite” model has even failed as a way of understanding food consumption since it makes it almost impossible to grapple with many contemporary situations, like the coexistence of malnutrition and obesity in populations and individuals.

We eat for nutrition, as a social act that draws communities together, and for our own pleasure. In every society, there is intense moral scrutiny of equity and balance in every stage of eating from production through waste disposal (Trentmann, 2007). The metaphor of consumption as eating makes it possible to neatly divide overconsumption and underconsumption, and to see one as deserving help and the other restraint. Underconsumption can only be explained by a failure of resources, ability, or group social conscience, and gluttony as a failure of will, morality, or social constraint. This is why the mixture of pleasure and political awareness in the Slow Food movement is so dissonant and controversial (Pietrykowski, 2004). In fact, there is no real or necessary connection between consumption and pleasure (and the absence of pain), and nonconsumption with pain or the absence of pleasure.

The metaphor of consumption as eating, most seriously, leads us to envision environmental problems as the result of “using up” resources when they should be distributed more fairly or used more sparingly. However, rather than using up a fixed stock of the earth’s nonrenewable natural valuables, we are most in danger of destroying renewable resources like timber and fish through overexploitation. The most immediate ecological dangers from pollution, extinction, global warming, and climate change are due as much to waste, unregulated emissions, capitalism’s inherent growth mechanisms, and political corruption as to the “using up” of resources, as the consumption metaphor would lead us to believe.

Standard of Living

The eating metaphor also makes it hard for us to focus because it leads into several dead-end conundrums, eternal problems of moral philosophy that have no universal resolution (and therefore cannot serve as the basis for policy or international agreement). One perennial distraction is the attempt to find a dividing line between needs and wants. The question of “how much is enough” has no objective solution, despite efforts to find one by dividing up the world’s resources into per-capita pie slices, or universal metrics of well-being (see Durning, 1992; Kasser, 2002; Jackson, 2009). Historical evidence shows instead that the division between what is defined as a basic need and what is considered a luxury always changes (Horowitz, 1988). These definitions change within a lifetime as well—the basic needs of college students are hardly the ones they will experience later in life. Sociologists provide good evidence that well-being is also relative, so that groups measure themselves in comparison with others, rather than against an absolute scale. A universal poverty

line is as illusory as a “luxury line” that could measure frivolity and, by extension, moral corruption. This does not mean that the question “how much is enough” is not useful in many ways. It certainly opens up productive lines of inquiry and forms the basis for important public policy debate, but we should not expect that research can objectively answer the question. This is why the concept of the “ecological footprint,” while an effective rhetorical tool, has not proven useful to scientists trying to compare resource use among groups. In part, this failure is because areas of land do not distinguish between renewable and nonrenewable resources, nor do they account for the difference between use and waste (Spangenberg & Lorek, 2002).

For these reasons, “standard of living” is better understood as a metaphor for normality and community consensus, which is embodied in the form of level surfaces at different heights, a stairway, or a movable platform like an elevator. Using this metaphor, the platform can stand still or move up and down, so height is the key attribute that allows us to compare states. The standard-of-living metaphor has another important physical property—while held down by gravity, it moves more easily in one direction than the other. It acts like it is governed by a ratchet, perhaps also by a spring or counterweight that exerts pressure to hold it in place. As it rises, it is supported at each new level. If it stands still (is held down) or gets lower (is held back) pressure increases, so when it is released it tends to bounce or jump up.

Poverty, following this metaphor, is absolute bottom, almost equivalent to death. It is represented as a “hand-to-mouth” existence where people are starving and have no possessions at all. Wealth is at the top, a state where anything is available in abundance. In between are a series of steps or levels, each of which “looks down” on those below. Moving downwards is “falling” and upwards is “climbing” and both are forms of “mobility.” Confined by this linear metaphor, lower levels of wealth and fewer possessions will always be closer to absolute poverty. The language of “growth” and “utility,” so deeply embedded in economics and development theory, contributes to the idea that “more is good” and “less is bad” in ways that economists like Gunnar Myrdal (1957) long ago recognized as dangerous.

There is good evidence that the elevator or step metaphor works for both technical specialists like economists (who speak of “pent up” demand) and for the American public. Studies of countries undergoing rapid inflation, economic crisis, and rising unemployment (including the United States during the recession of the 1980s) suggest that people cling to their ideas of middle-class standards of living, that loss of income can be traumatic, and that periods of

recession create “pressure” to compensate during later periods of expansion and “boom” (Newman, 1989; O’Dougherty, 2002). The trauma of lost standards is described in terms like “falling” and having to “pick oneself up” and get “back on track.” Constant growth in consumption and increased wealth may become so normalized that even standing still, or growing at a reduced rate, can be perceived as decline or stagnation, as “stuck in a tunnel,” a phrase reported to Graham & Pettinato (2002).

Recognizing the metaphorical nature of the standard of living helps us recognize some of the peculiar properties that make the topic such a distraction from realizing substantial change in environmentally significant behavior. The linear quality of the metaphor will always draw us into debate about what is the best metric—gross domestic product, human development index, sustainable well-being—and the relationship between this metric and other variables. To be sure, telling people that money and material goods will not make them happy has a didactic purpose, but established religions have been sending this same message for thousands of years without changing the direction of consumer culture (Miller, 2004). There may even be a “moral rebound effect” where reiterating the message creates guilt, which drives the continuing bulimic cycle of binge and purge so characteristic of contemporary consumer culture (Nichter & Nichter, 1991; Wilk, 2007). Restraint creates the need for release.

Instead of a linear metric, there is every reason to think of individual quality of life as complex and multidimensional. Most of us can easily think of things that make us happy and unhappy, satisfied and unsatisfied, that are not in any way mutually exclusive or reducible to a common scale, a product of using resources or eating more or less. There is no particular evidence that using resources has anything to do with a search for happiness or contentment in life. Nor do anthropologists find any evidence that people who live hand-to-mouth with few possessions are miserable or insecure. In reality, they often think of themselves as superior to people who are slaves to their own possessions, locked into boring routines of endless work (Day et al. 1999).

Open-ended questioning reveals that while they know and use a linear notion of wealth and poverty based on possessions and wealth, most Americans and Europeans also have few illusions about their ability to achieve life satisfaction by earning more money. The metaphor is powerful, but in practice when people buy things, use energy, and accumulate possessions they are fulfilling social obligations, the demands of work, education, and careers, and gendered role expectations, while seeking fun and distraction in a process best likened to creative improvi-

sation (e.g., Holt, 1995; Holt & Thompson, 2004; Miller, 2009; and my own research). They are just as likely to use metaphors like “rat race” and “treadmill” for the reality of middle-class existence as they are to foresee a continued elevation.

To design programs that are effective in persuading people to change their consuming behavior, it would help to know a lot more about the metaphors Americans use to understand their position in society, their movement through the life course, and the rewards and pitfalls of daily life. This information could provide a basis for “reframing” the issue of wealth and poverty more effectively in terms that do not require forms of “consumption” that use large amounts of energy and materials. Only the power of metaphor can make us ignore our own perception and experience of life to the extent that we are willing to accept a concept like “standard of living” as a natural and objective social fact that can be measured on a linear scale. This metaphor also leads applied social scientists astray by helping us think that degrees of consumption (levels of wealth) are equivalent to degrees of environmental harm (levels of destruction). In reality, some extravagant displays of great wealth—a Rolex watch, an electric car—are relatively environmentally benign, and some consumption characteristic of the poor—driving an old clunker, using illegal waste dumps, buying disposables in small packages—have far greater proportional impact. So far, the discussion of sustainable consumption has tended to shy away from this complex and difficult set of issues. It could be useful to ask what kinds of metaphors would be better than “quality of life.” Even as small a change as substituting “qualities of life” would be an improvement, since it does not imply that there is a single linear metric.

Perhaps the most difficult problem facing us in imagining effective policy responses to climate change and resource depletion is the way the possible solutions are often constrained by a frame that opposes government regulation with consumer freedom. Lakoff (2006) has done us the favor of dissecting the metaphors of North American conceptions of freedom, including the whole strange loose agglomeration of different things like property rights, political speech, wealth, justice, and shopping. These concepts and practices are brought together not by natural order or logic, but by their common role in constructing the metaphor of “freedom” in its modern, and particularly North American, cultural form. Lakoff (2006) defines at the core something he calls “simple freedom,” which is based on an embodied experience, nonmetaphorical and uncontested:

Freedom is being able to do what you want to do, that is, being able to choose a goal, have access to that goal, pursue that goal without anyone purposely preventing you ...Political freedom is about the state and how well a state can maximize freedom for all its citizens...A free society is one in which such “basic freedoms” are guaranteed by the state.

Freedom of this sort is visceral because it is metaphorically connected to the experience of being restrained, confined, or threatened. Freedom is experienced bodily by escaping confinement or reaching a destination, acquiring a desired object, or performing a preferred action, all of which involve moving legs and hands.⁵ The metaphors of simple freedom link desire—the physical experience of wanting something—with autonomous action to satisfy that desire. This connects quite well with the metaphor of consumption as eating, in which we experience desire (hunger), set out to satisfy that craving by finding and eating food, and then experience satiation and happiness, the reward of free action.

Lakoff proceeds to dissect the North American folk model of how freedom works, through the action of a homunculus-like agent residing in our heads called the “will.” Americans believe that this will motivates action, that it can be strong or weak, and that true freedom comes when the will prevails over internal weakness, emotions, and passions, and external obstacles and temptations. He goes on to show how this simple embodied form of freedom underpins American folk theories of rights, justice, property, security, law, and the role of the state.

This worldview accepts only two situations where free will can legitimately be thwarted or limited—by nature and through competition. Nature imposes limits—we may disagree about what is natural, but everyone agrees that when an earthquake strikes, or we are struck down by an injury, this is not an abridgement of freedom (Lakoff, 2006). We can certainly contest what is determined by human nature—whether homosexuality is caused by a gene or is the result of choice—but once the limitation falls under the laws of nature, it is generally regarded as acceptable. The other legitimate way freedom is limited is through competition for scarce resources. Freedom to compete is accepted, as long as the rules of competition are seen as “fair.” As Lakoff (2006) says, “If you are free to enter the competition, there is no abridgement of freedom. If you lose or are elimi-

nated on the basis of rules, there is no abridgement of freedom.”

This notion of fairness under competitive rules leads into contested territory because it turns out that a wide variety of different principles can be used to decide what is “fair.”⁶ This is crucially important for thinking about consumption, because it underlies ideas about equity of distribution and rights to use and own goods, and it may underlie our consistent failure to understand the values and processes used by people when making choices in the marketplace.⁷

Lakoff (2006) defines the following kinds of fairness, some of which are mutually compatible, while other combinations cannot coexist. They should be familiar to all of us from childhood arguments and family negotiations.

- Equality of distribution (one child, one cookie)
- Equality of opportunity (one person, one raffle ticket)
- Procedural distribution (playing by the rules determines what you get)
- Equal distribution of power (one person, one vote)
- Equal distribution of responsibility (we share the burden equally)
- Scalar distribution of responsibility (greater abilities, greater responsibilities)
- Scalar distribution of rewards (the more you work, the more you get)
- Rights-based fairness (you get what you have a right to)
- Needs-based fairness (you get what you need)
- Contractual distribution (you get what you agree to)

It is not hard to see that many of the debates about responsibility for causing and fixing climate change are founded in conflicting definitions of fairness. More fundamentally, framing issues in this way means accepting that carbon emissions are the product of free choices among autonomous individual entities with person-like qualities, acting according to a set of rules. Nations in this metaphorical construction are analogous to families, and their goal is to reach settlements on behalf of their members that will be “fair.” Among themselves, nations should each have a “fair share” of resources and emissions, acting

⁵ In the United States, early experiences of this nature are often part of games, fights, competitions, and sports, leading to a lifelong tendency to use sport metaphors in thinking about freedom.

⁶ Lakoff originally worked out the different folk rules of fairness in his book *Moral Politics* (1996) that is the source behind his more recent political work.

⁷ There is now a substantial literature on the failure of consumers to live up to their stated green morality. See, for example, Östberg (2003), Belk et al. (2005), and the collections edited by Bevir & Trentmann (2007) and Boström & Klintman (2008).

like proxy people for accounting and negotiating purposes.

The metaphor of nations as individuals competing with one another obscures a key reality of the distribution of wealth, power, and environmental impact on the planet: every country has its own rich classes that have adopted a high-throughput lifestyle, which uses large volumes of energy and materials. These cosmopolitan groups have many more economic, cultural, and political interests in common, across national boundaries, than they have with the destitute and working poor of their own countries. The problem of regulation may be more manageable if we think about identifiable groups that are heavy users of goods, energy, and services, rather than nations or individuals (e.g., Chakravarty et al. 2009).

The other consequence of using the folk definition of freedom as a valid analytical construct is that it leads into a sterile debate which opposes freedom to regulation, as if this were a single linear scale. As we see from Lakoff's analysis, freedom is actually a radial category, and at its center is a bodily sense of unfettered ability to reach a goal. The logic that binds law, rights, political action, and the marketplace is metaphorical, with many alternative alignments.

The metaphor of the nation-as-family, according to Lakoff, has two versions in North America—in the “liberal” one, the parents should be nurturant and caring, and in the “conservative” one parents should be stern disciplinarians. In one model the children (citizens) are inherently reasonable, and the state should give them the incentives and education they need to act responsibly. Then the children will build a commonwealth concerned with equal opportunities and care for the environment. In the other model, children are inherently unruly and immoral—even dangerous. A “stern father” has to teach them moral rules and respect for authority. The role of the state is to provide a structured set of rules that allows fair competition and then to impose discipline on those who transgress (Lakoff, 1996).

These two cultural models of family authority are rife with contradiction. For example, though the nurturant parent model places a high value on the democratic power of an educated citizenry, it presumes that real systemic change always begins at the top—it is the responsibility of the state. Conversely, the strict father model is based on an idea that people require exacting rules to get them to behave morally, but it denies that the state should have this power. These inconsistencies emphasize Lakoff's point that these are cultural models held together by metaphor and embodied experience, not logical models that produce systemic explanations or reasonable policy, or analytical models that explain how the United States government actually works.

I would point out that in both the nurturant and strict parent models, freedom is always in danger. Under the liberal approach, the state may be neglectful and not give its citizens enough information to make informed choices, or it may not protect the vulnerable members of the community. Under the stern father morality, children should make their own choices when they grow up and deal with the consequences themselves. The state takes away freedom if it interferes and smothers initiative, makes unfair (or overly complex) rules, or fails to act according to strict moral principles. In both constructions, the state can only help by providing information and education, or creating a “level playing field” that ensures fair rules of competition.

If we accept these folk models, we lock ourselves into a logic where regulation and freedom are opposed principles, and one will always grow at the expense of the other. If we cannot force people to behave better through the discipline of higher taxes or regulations (justified as fair), we try to appeal to their conscience and morality, or teach them a “better” set of values than materialism. The nurturant parent expects that properly educated citizens will follow Maslow's “hierarchy of needs” (1943) and Galbraith's “Affluent Society” (1962), realizing that material goods do not really engender happiness, and therefore becoming more community-minded and spiritual (Trigg, 2004; Etzioni, 2009, see critique in Slater, 1997). The strict father will expect citizens to seek out the most hedonistic and reckless forms of consumption and thinks they will only pursue culture and learning if they are forced, trained, or coerced.

Moral Calculus

The last decade has seen an outpouring of hopeful, cynical, polemical, and analytical writings about the need to bring moral and environmental issues more directly into the marketplace. The long history of ideas and practices of political and moral consumerism goes well back into the eighteenth century when abolitionist boycotts of “slavery sugar” were common and North American colonists burned English furniture and took pledges to buy only local produce during their revolution. In fact, a close look at the history of advertising and marketing shows that morality has always been part of the appeal of consumer goods, a normal part of everyday business. A deeper question might be what would lead anyone to imagine a marketplace in which commodities are completely anonymous and have no history, mean-

ing, or moral connections with society and nature (Wilk & Cliggett, 2006).⁸

Nevertheless, the dominant models of shopping and purchasing are still variations of rational choice and/or game theory, usually modified by constraints on information and people's cognitive abilities (e.g., Parnell & Larsen, 2005). This approach conflicts with ethnographic work on daily shopping practices that instead reveals a world that is intimately moral, revolving around value judgments and balances between the interests of the self, immediate "others," and broader communities (e.g., Miller, 1998; Östberg, 2003; see also Wilson & Dowlatabadi, 2007). It is easy once again to get distracted by the folk models, between individualistic and communal approaches, selfishness and altruism.

I think it is more productive to follow up on the fact that people do not live up to their stated commitments, neither consistently pursuing their own interests nor those of others. People claim they are concerned about animal welfare, but then eat hamburgers. They buy one pound of expensive fair trade coffee, but then drink a hundred cups of uncertified Brazilian blend in the office cafeteria. They say they are only doing what is best for their family, but then spend the college fund on a widescreen television so they can watch a football game.

This inconsistency leads some scholars to deep cynicism about the depth of individual commitment, or the impossibility of making informed choices in a world glutted with information and difficult contradictions between different kinds of "good" and "bad" products (e.g., Belk et al. 2005). And even positive choices in the marketplace do not necessarily have consistent environmental benefits. As Connolly & Prothero (2003) say, "Consumers, even when they are environmentally concerned, are still consuming, only they consume perceived green products and recycle more. The actual level of consumption is not identified as a problem."

It is possible that some of these behavioral inconsistencies are just the results of hypocrisy, poor decision making, or lack of knowledge. Perhaps our expectations for ordinary people in a complex market environment during an economic recession are unreasonable, and once they feel prosperous again they will respond more enthusiastically to moral market-

ing messages, certifications, and fair trade [though as Connolly & Prothero (2003) argue, these practices evade the basic problem of their total level of consumption]. I think it more likely, however, that there is an underlying metaphorical structure that people use to make sense out of complex purchasing choices, and once again it draws directly on the "consumption as eating" core metaphor.

How do we avoid getting too fat or too thin? To some extent we can depend on our natural appetite to keep us from starving, though there are disorders where people starve themselves. But we are also constantly exposed to incentives to "give in" to "temptation," which can lead us to overeat. The metaphorical extension of hunger and starvation is having no money or being unwilling to spend it, and the equivalent of gluttony would be overspending, buying more than one can afford, and falling into debt.

The way to avoid peril at both extremes is to find balance, by controlling impulses and inducements on one hand, and making sure we eat the "right things" and get proper nutrition (even if they taste bad) on the other. Periodically, we are likely to end up bingeing, which can only be corrected by dieting, exercising, and other activities that remove or balance the sin. In other words, we are using a system of moral accounting to guide us in addressing problems of saving, self-control, and temptation within a world of good and evil kinds of consumption (see Thaler, 1990; Shefrin & Thaler, 2004). Psychologists find evidence for moral balancing in studies which show that after people make a "green" consumer choice, they are more likely to act selfishly or cheat (Mazar & Zhong, 2010).

The visual metaphor of moral balancing is probably something like a see-saw, which balances evenly when equal weights are put on both sides, as in the "scales of justice." My impression is that people seek balance in different ways and along different time scales. This can be an improvisational process with a running total that is never "added up," or people may use a budget model with periodic "totals," followed by judgment, and then penalties or rewards. Following either accounting method, it becomes perfectly reasonable for a virtuous act, purchase, or performance like joining a community-supported agriculture scheme or subscribing to a "green" power company that charges higher rates to serve as justification for "sins" and "guilty pleasures," such as a shopping trip to Wal-Mart or a rainforest hamburger.

This is not to say that the balances people reach through the "see-saw" metaphor have anything at all to do with environmental impacts as defined by scientists. Nor is there any evidence that people keep separate mental accounts for goods labeled or identified as green, fair trade, ethical, healthy, or even

⁸ Max Weber thought that modern capitalism rested firmly on a moral foundation. Following his lead, a whole literature in contemporary economic anthropology makes the point that value-free markets in which goods are truly anonymous are exceptional. Studies of consumer research, marketing, and advertising have shown how the consumer marketplace in Europe and the United States has been deeply embedded in moral discourse about gender, family, cleanliness, patriotism, progress, modernity, and other themes (e.g., McGovern, 2006; Stanley, 2008).

cheap and low in calories. We do not know the degree of *transitivity* between different kinds of sin and virtue—it could vary from person to person, or region to region, but we should not expect the partitions to match any scientific analytical categories. We should also recognize that people often seek to achieve balance not by adjusting their behavior, but by adjusting their assessment of the moral valence of the things they buy, use, eat, and own. When the price of organic fruit suddenly goes up, we might maintain our consumption and seek balance (by actually consuming *more* hamburgers, or other “sinful” products). Or we might decide that organic food is really not much better for you, so it should not count as such a virtue, or we might even redefine it as a luxury that should be counted as a sinful indulgence.

Note the paradoxical effect of the see-saw metaphor. When we are convinced organic food is really “good” and then buy it, we may also be prone to consume more “sinful” food; then, when we consume less virtue, we also can consume less “sin” [as found in the experiments conducted by Mazar & Zhong (2010)]. The net result is that a “green” shopper can end up buying more of everything, especially if he or she lives in a household whose members disagree on what constitutes “good” and “bad” purchases. This example should give us pause in labeling a product like bottled water as purely “sinful,” rather than recognizing that every product presents a different mixture of positives and negatives from an environmental point of view.

It is very possible that the balance metaphor has wider generality for other kinds of environmentally relevant behavior. We know that Americans like their news to be “fair and balanced,” so when they are told the north polar icecap is disappearing and high altitude glaciers are melting, they expect that there is “another side” to the story and that the news cannot really be so bad. To some extent, the very process of governance and political decision making in the United States is envisioned through the metaphor of two parties in balance; whatever one says, the other will say the opposite. The truth (the state of balance) will always lie between, so any strong opinion or new proposal is automatically labeled “extreme,” way out on the edge, threatening to throw the whole machine out of kilter. For the same reason, as a folk theory of personality, the balance metaphor would lead us to think that other people, groups, or products that may *appear* to be virtuous, must have another perhaps hidden side, which is sinful and corrupt. This is very different from the “cynicism” that is often blamed for Americans’ failure to respond to green messages—it is instead a consequence of a fully formed and highly consistent folk theory based on a coherent metaphorical structure.

Invitation

Rather than close this article with a standard conclusion, I would instead like to issue an invitation to take folk models of consumption and the environment more seriously. As I have described them, the fire and eating metaphors of consumption, the elevator model of standard of living, the parental metaphors of freedom and government, and the balancing model of choice, all offer openings for us to reframe environmental issues in ways that give us some realistic expectations of changing behavior. At the same time, I hope I have also shown just how deeply the purchase, use, and disposal of material goods have become embedded in American culture. These metaphors show us that people think about their bodies, morality and personal conduct, families, and relationships with the government through consumption-related metaphors.

For some time, social scientists in a number of fields have worked toward a general “consumer culture theory” that would reconcile conflicting approaches. I have written a number of articles in this vein, most recently developing a practice-theoretical approach, building on work by Shove (2003), that tries to account for why most of what we call “consumption” is not really the result of what we could recognize as “consumer” choice. Instead, people pursue cultural constructs like comfort, convenience, hygiene, nutrition, and necessity, and buying and using energy and materials are just means to those ends. It makes sense, then, that we have not been able to successfully generate powerful and general consumption theories, since consumption itself is an unbounded category, from both folk and analytical points of view. People by and large do not consume for the sake of consumption itself—they are always doing it to achieve some other end, but those ends are diverse and not necessarily connected to one another except in a metaphorical way. Folk categories of behavior may have a ready folk explanation but no corresponding scientific analytical theory.

In trying to build predictive and powerful models of how consumption can change, it is important that we learn more about the folk models that people use in their daily affairs. I would suggest important topics to begin with would include the idea of “fun,” which seems to motivate the use of a great deal of energy and materials. As others have argued, comfort and convenience are also crucial concepts, and there has been some work, for example, on folk theories of how thermostats work and how people measure energy costs (Kempton & Montgomery, 1982). It is especially important to know how the “consumption” of virtual goods and services—software, telecommunications services, web platforms—is related to the

consumption of material goods, and similarly if the consumption of services like car rental or sharing can substitute for automobile ownership. We also urgently need to know more about the kinds of “fairness” people deploy in trying to understand concepts of wealth and poverty on a global scale. What ideas of rights, living standards, and needs do people in Europe and the United States use to make sense out of the rapid rise of consumer culture in China and the dilemma this development poses for global climate change? Why is some trade “free” and other kinds “fair” and why should they be moral opposites (Trentmann, 2009)?

These are urgent issues, not just because of the sheer size of the ongoing global ecological catastrophe. I believe that in the next decade, scientists and policy makers are going to be vocal about truths that are more than inconvenient—they are *unspeakable* because they conflict with very fundamental aspects of the American worldview. Technology, for example, cannot by itself solve the problem of greenhouse-gas emissions and climate change, which are now growing at a relentless pace. Sharing, rather than owning, some categories of goods is going to be necessary. Some products are just going to disappear from the marketplace through extinction or tight regulation. Energy is never going to be cheap and abundant again, and food is going to become more expensive as well. So far we have been telling people that they can be happier with less, but in reality, some people are going to be very unhappy at the prospect.

The concept of “sustainable consumption” has been a bit of jargon that allows science to say one thing and the public to hear another. Scientists have often said that overall energy use must level off or go down, while consumers think this can be achieved by replacing light bulbs or building some windmills. As we have seen with the example of former President Jimmy Carter’s famous “sweater” speech to the nation during the 1979 energy crisis, Americans take their freedom to consume very seriously and they do not like it when people suggest that they are going to have to give up some comforts and luxuries. During the recent debate about increasing automotive fuel economy standards in the United States Senate, Senator Tom Coburn (R-Oklahoma) asked, “What if you want to drive a gas hog? You don’t have the right any longer in this country to spend your money to drive a gas hog?” (Mirsky, 2009). The same week, I overheard an angry couple at a sushi bar complaining that “soon the federal government is going to be telling us what we can and cannot order in a restaurant!” Lakoff gives us good advice when he suggests that instead of challenging these deeply held dogmas, we are better off understanding their metaphorical basis,

and then reframing the issues so they appeal to other powerful values like justice and fairness.

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ARTICLE

The three-front war: pursuing sustainability in a world shaped by explosive growth

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This article characterizes the pursuit of sustainability as a three-front war. Success requires reductions not only in the environmental impact per unit of economic activity, but also in the economic growth to which we have become accustomed and the inequality that has accompanied it. To explain the difficulty in responding to this threefold challenge, the article reviews historical data on the evolution of the global economy. In the subsequent discussion, I argue that the explosive growth experienced since 1950 has created a world in which rapid progress toward and beyond affluence is “business as usual.” The pursuit of sustainability is difficult in large part because it takes place within this world shaped by explosive growth. An income transition is suggested as part of the effort to win the three-front war.

KEYWORDS: economic growth, world economy, resource consumption, social behavior, affluence, environmental impact

Introduction

Over the past half century, the earth’s ability to support human activity has become an increasing concern due to a long sequence of adverse impacts from the effects of pesticides (brought to the public’s attention in 1962 by Rachel Carson) to the emission of greenhouse gases leading to climate change (IISD, 2006). In response to this concern the scientific community has begun to identify boundaries within which the effects of human activity should remain (Rockström et al. 2009). In the policy arena, this concern has led to demands for a shift toward sustainability in human activity. While the notion of sustainability is, in the words of a recent review article, “creatively ambiguous” (Kates et al. 2005), what its pursuit entails is generally clear: the modification of human activity to reduce the pressure it places on the environment.

This article’s framing of the pursuit of sustainability as a “war” builds on other similar usage, such as President Lyndon Johnson’s War on Poverty in the 1960s in the United States (Newman & Jacobs, 2010). As in Johnson’s case, the use of the term “war” here is meant to convey the issue’s seriousness and the pressing need to address it. The identification of “three fronts”—lessening the environmental impact per unit of economic activity, lowering the worldwide rate of economic growth, and addressing global income inequality—builds on an active discussion in current literature. Tim Jackson’s (2009) treatment of relative and absolute decoupling brings the first two fronts into focus and makes it clear that

success in addressing both is essential. Reports that consider the environmental impacts of success in development make clear the importance of the third front (Commission on Growth and Development, 2008). Framing the pursuit of sustainability as a “three-front war” indicates that progress on all three is not only desirable, but necessary. The purpose of the article is to marshal evidence from recent work in economic history and other areas to support that point, to explain why fighting the three-front war will be difficult, and to begin to explore ways it might be effectively fought and won.

The article begins by presenting evidence supporting the characterization of economic growth since 1950 as “explosive” and showing how that growth has shaped our current expectations. Our world today is characterized as a global consumer society poised on the brink of affluence. To put a human face on this characterization, a group of examples explores the pervasive impact of explosive growth throughout the world. Turning to the pursuit of sustainability in that world, the need to substantially reduce both the environmental impact per unit of economic activity and the pace of growth in economic output is explained using the metaphor of running down an up escalator. Looking ahead, most of the anticipated growth in output comes from growth in income (i.e., output per capita) not population, so to lower growth in output one needs to lower growth in income. How might such a reduction come about? The article argues for an income transition in which high income nations forgo further income growth, thus allowing other nations to reduce the pace of their income expansion while still closing the gap with the

West. The article does not discuss the income transition in detail. It instead provides a computation showing that such a transition could in principle provide the basis for progress in the “three-front war.” Vision and measurement are suggested as useful points of departure for this effort.

This article is largely a work of synthesis and interpretation. There are, however, three somewhat novel aspects. The first is the development of numerical criteria for consumers and for affluent and near-affluent societies. These criteria provide a quantitative basis for the claim that the world today is a global consumer society poised on the brink of affluence. The second is the use of the spread in income between the nations of the West and the rest of the globe as a measure of global inequality. This measure has particular relevance in the pursuit of sustainability. Finally, descriptive devices—the three-front war, the escalator, and the income transition—are used to develop the argument (see also Wilk, 2010 and Princen, 2010 in this issue). While this approach rests on other scholarship, each element brings a bit of novelty and, hopefully, clarity to the twists and turns of a complex argument.

The Long View

The business press routinely provides quantitative information on the state of the economy. Those who follow economic affairs are so used to receiving this reporting that it comes as something of a shock to recall that its availability is a relatively recent development. Data on the standard measure of a nation’s economic output—gross domestic product (GDP)—only became widely available in the 1950s. However, economic historians have been able to develop estimates for earlier years. One of the most remarkable achievements of this sort is the work of Angus Maddison. Drawing on a variety of sources, Maddison (2007) developed data on GDP that cover the entire globe and span over 2,000 years. In addition to their remarkable scope, two features make Maddison’s data particularly useful:

- GDP is developed at the national level using local currencies and there are various ways to convert it to a common currency. Maddison uses purchasing power parity (PPP), a technique designed to produce comparable data on the prices paid for consumer goods and services.
- As initially developed, data on GDP reflect inflation, but Maddison’s data have the effects of inflation removed.

These features ensure that, to the extent possible, Maddison’s GDP data provide a consistent picture of

Table 1 Economic growth over the long term.

	1	1000	1820	1950	2003
Output (US\$ billions)	105	120	695	5,337	40,913
Population (millions)	226	267	438	2,526	6,274
Income (US\$ per capita)	467	450	667	2,113	6,516
Spread (US\$ per capita)	116	-25	622	5,171	19,493

output through time at the national, regional, and global levels.

Table 1 provides global-level historical information drawn from or developed using Maddison’s data. The information covers the preindustrial and industrial eras (i.e., before and after 1820). The two eras are subdivided to indicate the variation in growth within them. Following Maddison, the financial data are all in 1990 dollars. Based on the Consumer Price Index (CPI), if the data were expressed in current (i.e., 2007) dollars, they would be about 60% higher.

Table 1 begins with output. This measure is followed by population and then income, defined as usual to be the ratio of output to population (i.e., average real GDP per capita). The income data provide an indication of the volume of goods and services that could be provided to each person, adult and child, if output of the global economy was divided equally. While income is derived from output and population, it is often useful to turn things around and to think of population and income as giving the “length” and “breadth” of the economy’s output. Just as length times breadth defines the area of a rectangular field, so population times income determines output. Thus, if population increases by a factor of 2.5 and income more than triples, output increases nearly eightfold. Since 1950, that is roughly what has happened.

The spread, shown at the bottom of Table 1, is the difference in income between two groups of nations: what Maddison refers to as “the West” (Western Europe, North America, Australia, and New Zealand) and the rest of the globe (“the Rest”). In 2003, income in the West was US\$23,710 while for the Rest it was only US\$4,217. Thus, for 2003, the spread was US\$19,493. Unlike the first three data series shown in the table, the spread is not a standard macroeconomic measure. However, its use is well supported. The divergence between the West and the Rest is a current area of interest in economic history (Pomeranz, 2000). Comparisons of incomes provide standard measures of inequality. What is new here is the use of the term “spread” and the focus on the difference, rather than the ratio of incomes generally emphasized (Berry & Serieux, 2007).

There are many measures of global inequality and each provides a different perspective on the global income distribution. Gini coefficients, the

most common measure of inequality, show stability, particularly since 1950 (Milanovic, 2005). Analysis based on the US\$1.25-per-day “poverty line” used by the World Bank suggests progress in poverty reduction (Chen & Ravallion, 2008). Consideration of the spread shows that, even if one accepts these results, and many do not (e.g., Reddy & Pogge, 2005), there is still reason for concern about worsening global inequality. The spread provides a measure of the difference in the goods and services that, on average, incomes in the West and in the rest of the world can purchase. The data in Table 1 show that over the industrial era massive income growth has been accompanied by an even greater increase in the spread. Since 1820, per capita income has increased by roughly US\$6,000, but the per capita spread has grown by about US\$19,000. Most of the increase in both measures has occurred since 1950.

In large part, it is our experience that shapes the future we anticipate. In particular, patterns of change in recent historical data provide the basis for “business-as-usual” scenarios. Table 2 shows such a scenario for the global economy in the year 2030. The output, population, and income data were produced by Maddison. They are well known and have been widely cited by experts in discussions of macroeconomic issues (e.g., Federal Reserve Bank of Kansas City, 2006). The spread for 2030 was computed from Maddison’s income projections.

On one hand, some analysts claim that a scenario based on “business-as-usual” is too optimistic. In the early 20th century, economic growth was below the rather wide range suggested by previous experience (World Bank, 2007). It is possible that experience in the early 21st century will be similar. However, if the rate of growth through 2030 proves to be the same as that seen from 1913 to 1950, a period with two world wars and the Great Depression, global output in 2030 would still reach US\$67,485 billion, about 65% more than in 2003. On the other hand, there are those who assert that Maddison understates the likely pace of future economic growth. For instance, Nobel laureate Robert Fogel (2007), who received the prize in economics for work related to long-term growth, expects a much more rapid pace. In light of these considerations, the more than doubling of global output in 27 years shown in Table 2 is a midrange scenario.

Explosive Growth

The data in Table 1 make it clear how much of the growth experienced over the last two millennia is packed into the period since 1950. In the years through 1000 there was almost no change in output, population, or income. Over the next 820 years there was growth, but its pace was very modest. After 1820

Table 2 Projections for 2030.

	2003	2030
Output (US\$ billions)	40,913	96,580
Population (millions)	6,274	8,175
Income (US\$ per capita)	6,516	11,814
Spread (US\$ per capita)	19,493	28,581

things changed dramatically. Within the industrial era, the years since 1950 account for most of the increase. This “end-loading” of growth is particularly striking for output. In 1950, output stood at only 13% of its 2003 level.

There are two effects at work in Table 1, each of which contributes to the remarkable change since 1950. First, rates of growth are increasing. For output, the rate was 0.2% per year from 1000 to 1820, 1.6% per year between 1820 and 1950, and 3.9% per year since 1950. In addition, there is a “size effect.” The growth experienced between 1820 and 1950 determines the starting point for the subsequent growth. Had growth rates remained at the pre-1820 level, output in 1950 would have been US\$918 billion, not US\$5,337 billion as shown in Table 1. With this lower starting point, the annual growth rate of 3.9% since 1950 would have contributed US\$6,056 billion to global output in 2003, rather than the US\$35,576 billion that was actually added.

The combined impact of high growth rates and the size effect becomes greater as one moves closer to the current day. The period from 1990 to 2003 accounts for about one-third of the increase in output seen over the last 2,003 years. Change at the pace maintained by the global economy since 1990 is rarely seen in day-to-day life. Were ordinary life to speed up to match that pace, very strange things indeed would occur.

For instance, imagine a chance encounter with a friend’s son who you last saw three weeks ago on his tenth birthday. Suppose the child’s growth over the three weeks bore the same relationship to his previous growth as the growth in global output since 1990 has to its previous growth. If the boy was four feet tall on his birthday, he would be six feet tall three weeks later. A child growing two feet in three weeks would be shocking. For the global economy, packing one-third of the growth in output seen over 2,003 years into the last thirteen is an equivalent “growth spurt.” However, it is not shocking because, in terms of individual human experience, three weeks is “short” while thirteen years is “long.”

The years since 1950 have been a period of explosive growth. Normally, when explosions occur, the response is to take cover and wait for things to return to normal. However, if the explosion goes on

for decades it becomes part of ordinary life. That is where we find ourselves today.

Consumption and Affluence

Our world today is shaped by the explosive growth experienced in the recent past and by the expectation that this growth will continue with only temporary setbacks. To begin coming to grips with that world consider a simple question: “What are we?” In responding, context matters. Here the context is global. This rules out a host of parochial responses, such as “We are Americans” or “We are Hindus.” Answers will reflect the respondents’ sensibilities and concerns. Some might say, “We are all children of God.” Others might respond that “We are part of the web of life on Earth.” One can imagine the same individual giving either of these responses if relations among different religious groups or stewardship of the natural resources that sustain us were uppermost in his or her mind when the question was asked. Here what is uppermost in mind is the impact of explosive growth. The response on which our discussion will focus is the following: We are a global consumer society poised on the brink of affluence.

The remainder of this section develops and applies criteria for a nation or a region of the globe to be considered a consumer or an affluent society using Tables 1 and 2 and the data upon which they rest. The results of this exercise are summarized in Table 3. They show quite clearly the emergence of the global consumer society at the “brink of affluence” (i.e., near affluence). The following section addresses current attitudes and behaviors relevant to consumption and affluence. Together, this quantitative and qualitative discussion provides a picture of the world shaped by explosive growth.

It is common to refer to the nations of the West as consumer societies. However, most of the rest of the world is much poorer than the West and it may seem odd to regard these people as part of a global consumer society. Nonetheless, that description is becoming increasingly appropriate. Research has shown that individuals become “consumers” when household income for a family of four reaches US\$1,800 per capita (measured in 1990 dollars)

(Myers & Kent, 2004). The US\$1,800 figure fits well with recent work by Martin Ravallion, a World Bank economist known for his analyses of global income issues. Ravallion (2009) defines the “developing world middle class” as comprising people with incomes of US\$2 to US\$13 per day in 2005 dollars. Expressed in 2005 dollars, the US\$1,800 standard is roughly 50% higher, placing it at about the midpoint of the US\$2 to US\$13 interval. In 2005, out of a population of 6.5 billion, 2.6 billion were living on \$2 a day or less, another 2.6 billion on US\$2 to US\$13 a day, and 1.3 billion on over US\$13 a day. The top group are all consumers. So are many people in the middle group. Indeed, as a recent report by *The Economist* (2009) makes clear, the process of becoming a consumer takes place gradually as income rises above US\$2 per day. Thus, in 2005 the number of consumers in the world was between 1.3 and 3.9 billion. The West and the other high-income nations, with a population of fewer than a billion, accounted for only part of them.

At a certain point, the number of consumers becomes sufficient to change the character of a nation or region, making it a consumer society. We define consumer societies as nations or regions in which average per capita income is at least twice the US\$1,800 level. This indicates that a substantial proportion of the nation’s or region’s population qualifies as consumers. Maddison’s data show that, by 2003, incomes in all the major nations and regions of the globe except India and Africa exceeded the US\$3,600 threshold. In 1950, only the nations of the West had incomes that high. Looking ahead, Maddison’s projection for India’s income in 2030 is US\$7,089, far above the level required to become a consumer society. Based on Maddison’s projections, only in Africa does the development of a consumer society lag significantly.

The affluent society, discussed in John Kenneth Galbraith’s (1958) well-known book of that title, provides a second point of reference for global income growth. Many things about the initial affluent society were unique to the United States, but if one examines historical data on income for the country (Maddison, 2003), a general criterion for an affluent society can be developed. During the 40 years pre-

Table 3 Movement toward consumer and affluent societies.

Type of Society	Income Threshold (US\$1990)	Nations/Regions Beyond the Threshold (% of Global Population)		
		1950	2003	2030
Consumer	3,600	19.2	69.7	82.3
Affluent	8,900	6.2	13.8	32.3
Near Affluent	6,675	6.7	15.5	82.3

ceding the start of World War II, the range of income in the United States was roughly US\$4,100 to US\$6,900 (in 1990 dollars). During the war there was a dramatic increase, after which high levels of income persisted. Average per capita income of US\$8,900 or more during this period provided the basis for the emergence of an affluent society.

An income of US\$8,900 can be regarded as a threshold for the emergence of an affluent society. Using that figure, along with Maddison's data and projections, one can follow the progress toward affluence on a worldwide basis in a fair degree of detail. In 1950, only the United States and Switzerland had an income at or above US\$8,900. During the subsequent 60 years, the remainder of what Maddison calls "the Rich" (the nations of the West plus Japan) have all become affluent. Indeed, by 2003, all of them had incomes of more than twice this threshold value for affluence. Among the other nations and regions of the world, incomes rose between 1950 and 2003, but not to the level of affluence. However, if Maddison's projections prove accurate, by 2030 roughly one-third of the world will reach this level.

As shown in Table 2, Maddison projects a global income in 2030 well above the US\$8,900 threshold for affluence. In part, this reflects the incomes of the Rich, which are expected to reach four times the threshold. However, the other regions and nations are projected to have an income of US\$8,504 in 2030, just shy of the threshold level. To show the progress toward affluence anticipated in Maddison's projections, data on "Near Affluence" (i.e., income at or above 75% of the threshold for affluence) are included in Table 3. In 1950 and 2003 there was little difference in the nations and regions that qualified as affluent and near affluent, but by 2030 most nations and regions are near affluent. Based on Maddison's projections, only Africa fails to reach near affluence.

Meet the People

As the data in Table 3 show, in 2003 about 70% of the world's population was part of a consumer society. Continuation of the explosive economic growth we have come to regard as "business-as-usual" will bring most nations and regions to near affluence in 2030. In order to come to grips with the implications of these developments, the following discussion assembles a few anecdotes from several sources about life in various parts of today's world.

- Soon after the fall of the Taliban, Brenda went to Kabul with a group of relief workers where she intended to serve as an assistant to the mission's health professionals. Instead, once word got out

that she was a hairdresser, she ended up doing haircuts every fifteen minutes all day long (Postrel, 2003).

Brenda's experience in Kabul highlights the process of creating and maintaining an identity, a process in which the consumption of goods and services plays an increasingly important part. Throughout the world, and particularly in developing countries, there is continuing massive population movement from rural to urban locations (UNPF, 2007). Those who move to the cities lose the identity they had as members of an established rural society. How they look and what they own provides ways for them to construct a new urban identity.

- Vidya lives with ten members of her family in a single room on the outskirts of Mumbai, a large city in India. Her home has no running water or refrigerator, but there is electricity for three light bulbs and a couple of fans. Vidya works at a bank. Her goal is to save enough to purchase a car (Worldwatch Institute, 2008).
- Casas Bahia, Brazil's largest retailer, has recently opened its first store in a *favela* ("slum"). Customers flock to the store because it offers installment purchase plans designed for those without credit cards or even bank accounts. As Maria, a resident of the *favela*, explains, "Everything I have comes from Casas Bahia" (*Economist*, 2009).

What is striking about Vidya is the gap between her current circumstances and her goal. India has had very rapid economic growth since the early 1990s. When such growth continues over a period of years it becomes "reasonable" to plan, as Vidya does, for dramatic leaps in consumption. Her goal mirrors the American experience as it became an affluent society. Rapid growth in ownership of a wide range of consumer goods, including cars, was a defining feature of the early postwar period in the United States. Maria's words explain all too clearly how aspirations such as Vidya's are becoming reality today. The emergence of a consumer society has been supported by the appearance of department stores and, more recently, shopping malls. Comparative studies show uniformity in these developments across the globe (Stearns, 2006).

- College students in the United States were asked to consider two different possibilities when they graduated and entered the work force. Either they would earn US\$50,000 a year while their classmates averaged US\$25,000 or they would earn US\$100,000 while their classmates averaged twice that amount. The students were asked which possi-

bility they would prefer. Most chose the first option (Layard, 2005).

- The Birkin is a luxury handbag. Despite its high price, there has been a waiting period to purchase one. What creates such a demand? As one reviewer of the book *Bringing Home the Birkin* explains, “For a woman of a certain class anywhere in the world, carrying one is the quickest way to telegraph to other women, ‘I win.’ And so some of them will do or pay just about anything to get one” (Muhlke, 2008).

The behavior of both the college students and the “Birkin ladies” provides examples of positional concern—valuing one’s income and possessions based on their relationship to those of others. For the Birkin ladies, there is always something new—weekly sessions with the most desirable personal trainer or the most expensive vehicle to drive or be driven in—that allows the message “I win” to continue to be sent. Similarly, as the college students go through life, they can continuously shift their focus to ever-richer peer groups, driving them to seek ever-higher incomes simply to send the same signal, “I win.” In these ways, positional concern fuels insatiable demand. It goes a long way in explaining how the Rich manage, year in and year out, to absorb vast amounts of additional goods and services.

The Birkin ladies and others like them are the last link in a chain of aspiration that begins with billions like Vidya and Maria and binds together the global consumer society. In the United States, historical studies have shown that, over time, the less-well-off portion of a population develops an ever broader set of “wants” that reflect the consumption patterns of higher income reference group (e.g., Brown, 1994). A global version of this process is underway today. The emergence and rapid spread of mobile phones has helped to create a global reference group. Only a few decades after the technology’s introduction there are billions of subscribers worldwide (Castells et al. 2007). Contemporary phones can take and transmit pictures, access the Internet, and carry television shows and video downloads. And where are the Birkin ladies in all of this? They are

characters on television programs and participants in “news” videos that increasingly define international consumer aspirations.

Going Down the Up Escalator

Having “set the stage” we are now ready to address sustainability. A thorough discussion would touch on a wide range of issues including water use, preservation of biodiversity, and the environmental impacts of emissions of various types. Here, to keep things manageable, the discussion will focus on just one of the major concerns—climate change due in large part to the carbon released when fossil fuels are burned.

Recent historical experience leading to an expectation of continuing explosive economic growth provides the context for considering the pursuit of sustainability. Maddison (2003) describes the linkage between carbon emissions from fossil-fuel use and the increase in economic output since 1820 and expected through 2030. Intensity, that is the amount of carbon emitted per dollar of economic activity, provides the connection between output and emissions. As shown in Table 4, intensity has fallen since 1950. Maddison projects the rate of decline to be even greater in the future. However, the effects of the decline in intensity have been and are expected to be more than offset by growth in output. As a result, emissions from the use of fossil fuels are projected to continue to grow. While their rate of growth declines over time, the amount to which the rate applies increases. The combined effect is shown in the bottom line of Table 4. The amount of additional carbon emissions each year through 2030 remains substantial.

Table 4 depicts a world that was walking down an up escalator between 1950 and 2003 and, based on Maddison’s projections, will be running down through 2030. The escalator is the growth in output. The pace of the walk and run is indicated by the rate of decline in intensity. While the declines shown in Table 4 may appear modest, over time the reductions in intensity have large consequences. Since 1950, intensity has been cut roughly in half. Looking ahead,

Table 4 Growth in output and emissions since 1820.

	1820–1950	1950–2003	2003–2030
Rates of change (% per year)			
Output	1.6	3.9	3.2
Intensity	2.1	- 1.2	- 2.1
Emissions	3.7	2.7	1.0
Average annual increase in emissions (millions of metric tons)	12.4	95.8	77.4

Maddison (2003) projects a roughly similar cut over half as many years. We can, and should, respond to climate change by “running,” that is by continually striving to increase the efficiency of our fossil-fuel use. However, while it is possible to identify options for improving efficiency, getting them adopted has proved difficult even when they are very cost effective (Cowart, 2001). Furthermore, success in energy-conservation efforts is often accompanied by “rebound” in demand resulting in additional fossil-fuel usage (Gotttron, 2001). Thus, running is, by itself, a very risky response to emissions growth.

The details of the discussion above are specific to the use of fossil fuels. However, similar points can be made concerning a wide range of sustainability issues. We can, and should, be more “efficient” in our use of all nonrenewable natural resources as well as freshwater and land, particularly forested areas. However, in each case, the effects of the “economic growth escalator” will offset the effects of increased efficiency. Indeed, as Princen (2005) has argued, pursuing efficiency generally fosters additional consumption. Thus, as with fossil fuels, avoiding a risky reliance on increasing efficiency alone puts slowing the pace of growth in output on the agenda.

What are the prospects for a significant decrease in the pace of growth in economic output? To make an assessment, one needs to examine the drivers of that growth. As noted earlier, output is the product of income and population. The data in Table 1 show that over the industrial era the contribution of population to growth in output has decreased and that of income has increased. Looking ahead, the projections provided in Table 2 suggest a continuation of this trend. Population growth accounts for only 30% of the 136% increase in output through 2030. Thus, getting off the economic growth escalator means making a set of personal and political choices that reduce growth in income.

The scenarios presented in Table 5 illustrate the linkage between growth in income and emissions. Both scenarios assume population growth and declines in the intensity of emissions as in Maddison’s projections. However, the second scenario departs from Maddison, showing the change in income re-

quired to keep global emissions in 2030 at the same level as in 2003. This is a very modest goal in light of the current climate-change literature (Worldwatch Institute, 2009). As the results in the table show, to achieve that goal the rate of growth in income needs to be cut to half of what Maddison projects. A drop in population growth would be a welcome addition to the no-growth scenario. However, rather than reducing the need for cuts in income growth, it would simply make a more appropriate bottom line—a decline in emissions through 2030—possible.

Table 5 shows that the historically unprecedented pace of reductions in the intensity of emissions assumed by Maddison is ultimately insufficient to address climate concerns. In addition, anticipated growth in income needs to be cut substantially simply to hold emissions at their current levels. Unfortunately, that is not where we are headed. While acknowledging the modest degree of downshifting that has occurred in the United States and elsewhere since 2008, virtually all evidence suggests that among the Rich, ever greater income and consumption remain foremost objectives. Affluence is increasingly the goal throughout the developing world. As income growth moves new billions into the consumer society, the local and global media provide ever more distant points of reference, creating a treadmill of raising aspirations. Achieving affluence, or vastly exceeding it, rather than addressing climate change and other environmental concerns, is becoming the primary concern of an ever larger proportion of the global population.

What responses are political leaders likely to offer to a suggestion to moderate their nation’s income growth in order to address issues of sustainability? Those in the developing world will stress the need for, and equity of, income growth for them to narrow the spread (Krugman, 2009). Unfortunately, leaders in the rich nations will also claim a need for continued income growth. There is plenty of “expert advice” urging them to retain their position at the top of the global economic hierarchy (Alesino & Giavazzi, 2006), and indeed to see continuing growth in income as a requirement for progressive change (Friedman, 2005). This pattern of decision making is what the

Table 5 Possible paths for emissions.

	Reference Case (Maddison)	No Growth in Emissions
Growth–2003 to 2030 (% per year)		
Population	1.0	1.0
Income	2.2	1.1
Output	3.2	2.1
Intensity of emissions	-2.1	-2.1
Carbon from fossil-fuel use	1.0	0.0

economist Robert Frank (2007) refers to as “smart for one, dumb for all.” To find a way out of this dead end, it is useful to look at developments in the area of population.

An Income Transition

Change in population depends on the difference between the birth and death rates. Over the industrial era, two major developments involving these rates have occurred. First the death rate fell. Then, with a lag, the birth rate followed. This two-stage movement is referred to as the demographic transition. It is the second stage of the transition—the lagged decline in birth rates—that is of particular interest at present. As with the changes required to reduce the death rate (Riley, 2001) and then to feed the added billions (Evans, 1998), the details of the second stage of the demographic transition are complex. However, looking beyond the details, a key point emerges. Birth rates have always been far below biological potential. In the past, the rates chosen were appropriate for rural, agricultural societies with high infant and early childhood mortality (Clark, 2007). The recent drop reflects a number of factors including the shift from agriculture to industry and commerce, the expansion in education and work opportunities for women, and growing urbanization. In this new environment, having fewer children “makes sense.”

The industrial revolution ushered in an era of rapid income growth as well as population growth. It is possible that, as with population, there could be a lagged choice to reduce the rate of income growth, creating an income transition. Were it to occur, such a reduction would be a complex phenomenon. Its timing would differ among nations, as would the specific developments fostering it and the changes accompanying it. However, to take place, the reduction would need to be generally recognized as part of a strategy for the pursuit of well-being. The importance of this motivation rests on recent findings at the border between psychology and economics that show that people have a general propensity to reject change even when it would be individually advantageous to accept it (Thaler, 1992). Thus, for change to take place a powerful force, such as the pursuit of well-being, must be behind it.

How might low or even no-income growth fit into a strategy for the pursuit of well-being in today’s world? To begin to answer this question, a brief comparison of the United States with France is useful. Labor productivity (i.e., GDP per hour worked) is about equal in these two nations. However, work time in France is significantly less, reflecting a 35- rather than 40-hour week, a 40- rather than 46-week working year, and other differences. As a result,

France has a significantly lower level of per capita income than the United States (Alesina et al. 2005). These differences reflect choices by the French to limit the work week and to mandate specific minimum levels of annual vacation. Similar choices have been made in the past in various nations of western Europe (Eichengreen, 2007) and they could, at least in principle, be made in the United States as well. Other choices could also be made. For example, a “sabbatical policy” could provide time off at reduced pay during the course of a worker’s life, funded using a mechanism similar to Social Security. There is a variety of evidence that choices such as these would enhance the well-being of workers in the United States:

- Survey data show that American workers’ ideal hours of paid work are much less than actual (Jacobs & Gerson, 2004).
- Analyses of European vacation/leave policies have identified positive impacts on well-being (Alesina et al. 2005).
- Recent examples show that sabbaticals, even at a small fraction of full salary, are attractive (Dominus, 2009).

While the evidence just presented is specific to the United States, the argument for a shift to the pursuit of well-being via time rather than material affluence is broadly applicable to all the rich nations. A reduction in paid work would provide additional time for other parts of workers’ lives, such as family, friends, and civic activities, which could contribute to enhancements in well-being. Studies have shown that work, and the commute associated with it, is, in general, the least satisfying part of an individual’s day (Frey & Stutzer, 2002; Kahneman et al. 2004). Fewer work hours would also help people to reduce the stress that often accompanies the increasing intensity of work in all the rich nations (Green, 2007). This, in turn, would improve physical well-being by reducing stress-related disorders (Helman, 2007). When considering these arguments, it is useful to note that while workers in most rich nations have shorter hours than their counterparts in the United States, there is evidence that reductions in working hours would still be broadly attractive (Victor, 2008).

For the nations of the West, the argument for a shift away from income growth as part of the pursuit of well-being and sustainability has been discussed by Juliet Schor (2005) and others. However, the developments that might lead the rest of the world to make a similar shift have received less attention. As in the West, there is recognition of the environmental impacts associated with economic growth, reflected, for example, in China’s rapid recent development of

wind as a source of electricity generation (Bradsher, 2009). However, concern about the environment alone is not likely to provide a sufficient impetus for developing nations to reduce the pace of their income growth. The West provides the model for the pursuit of well-being. So, if a focus on time rather than material affluence takes hold in the West, it will likely spread, first to other rich nations and then more broadly. However, to effectively foster lower income growth in the rest of the globe, the pressure to catch up with the West also needs to be reduced. The spread shown in Tables 1 and 2 provides a measure of the difference in the goods and services which, on average, incomes in the West and the rest of the world can purchase. In the current global consumer society, the magnitude of this difference is well known in the developing nations. To increase the likelihood that they will limit the pace of their income growth, the spread needs to be reduced.

Table 6 shows Maddison's projections for income in 2030 and an alternative that illustrates an income transition. As in the "no-growth" scenario presented in Table 5, the transition scenario assumes that growth in global average income is held to 1.1% per year. This is roughly half the pace achieved from 1950 to 2003 and projected by Maddison for the future. In the transition, income in the West remains constant, reflecting a very strong shift in focus to time affluence. Zero income growth in the West allows the developing nations to grow a bit more slowly and sustainably while still narrowing the income spread. Income growth elsewhere around the world is less than in Maddison's projections, but still sufficient to move the Rest to near affluence. Rather than rising by over US\$9,000, the spread falls by nearly US\$3,000. Growth of 1.1% per year in income rather than Maddison's 2.1% provides a lower output in 2030. As in Table 5, the reduction in output, along with Maddison's assumed decline in intensity, results in no growth in carbon emissions from fossil-fuel use. This point is highlighted in the bottom line of Table 6.

The income-transition scenario presented in Table 6 shows progress, reducing carbon emissions in 2030 below what was expected based on Maddison's business-as-usual assumptions. The progress is modest, holding emissions to 2003 levels rather than reducing them. However, the changes required to produce this progress are substantial and the possibilities for failure numerous:

- Income in the West in 2030 is held to the 2003 level, a reduction of more than one-third from Maddison's business-as-usual figure.

Table 6 An income transition scenario.

	2003	2030	
		Maddison's Projections	An Income Transition
Income (US\$1990):			
Global	6,516	11,814	8,755
The West	23,710	37,376	23,710
Rest of the Globe	4,217	8,795	7,157
Spread (US\$1990):	19,493	28,581	16,553
Annual carbon emissions (millions of metric tons)	6,705	8,794	6,705

- There is a roughly 25% reduction in income growth in the rest of the world compared to Maddison's projections.
- The cuts in income growth are accompanied by substantial decline in the intensity of emissions assumed by Maddison.

One can imagine many ways in which each of these three interlocking parts could fail to come together to produce what is assumed. Consider the West. There is a spread in income among the nations in this group. Those at the "low end" might demand convergence, requiring the incomes for those at the top to fall if there is to be no change over all. Those at the "top end" may resist such "degrowth." The challenge for those committed to the pursuit of sustainability is to find ways to successfully address all the key parts.

Conclusion: Fighting the Three-Front War

The need to reduce the intensity of environmental impact per unit of economic activity and the pace of growth in output makes the pursuit of sustainability a "two-front war" (see Wilk, 2010 and Princen, 2010 in this issue). The second front raises the issue of an income transition. When one considers the requirement for such a transition to extend beyond the West to the entire globe, the need to address income differences as well as intensity and output turns the pursuit of sustainability into a three-front war. The world in which we live, where explosive economic growth has become "business-as-usual," makes fighting that war difficult.

How might the struggle for victory begin? The answer offered here is with a vision for the future and a way of measuring our progress toward it. Donella Meadows (1994) explained the role of vision quite clearly: "Vision is the most vital step in the policy process. If we don't know where we want to go, it makes little difference that we make great progress." Meadows went on to explain how a vision should be

developed: “The process of building a responsible vision of a sustainable world is not a rational one. It comes from values, not logic.”

The discussion leading to our framing of the pursuit of sustainability as a three-front war suggests the values to guide the visioning: quality of life rather than greater income, global solidarity rather than global competition, and environmental stewardship rather than unlimited use of limited resources. As Barry Hughes & Evan Hillebrand (2006) explain, these are the values that increasingly inform global initiatives today. The notion of plenitude developed by Juliet Schor (2010) is an example of a vision driven by these values. Schor focuses primarily on the West. However, her introduction clearly acknowledges the need to situate change in the West in the global context. For the West, the key aspects of plenitude are increased well-being and “cutting-edge green technology,” features that resonate clearly with our discussion of what is required for a successful income transition. Plenitude is a serious and important effort to provide the type of vision needed to help guide the fight in the three-front war.

Measurement follows vision. Once we know where we want to go, we need to be able to tell if we are moving in the right direction. The choice of a good indicator is crucial. We need a simple, clear replacement for our current indicator—real GDP—one that increases with gains in quality of life, global solidarity, and environmental stewardship. The Quality of Development Index (QDI) formulated recently by the Tellus Institute (Rosen et al. 2010) provides an example of the type of indicator required.

Why put so much emphasis on measurement? The answer is in a well-known aphorism, generally attributed to management consultant Peter Drucker, “What gets measured gets done.”

A global consumer society poised on the brink of affluence is the context for the pursuit of sustainability today. As the results in Table 6 show, it is easy to describe a pattern of change that makes progress. The difficulty lies in overcoming the effects of explosive economic growth on our behavior and expectations. We have come to see such growth as both necessary and desirable. In fact, it is neither. Our ability to recognize that fact and to act on it in a coordinated global fashion will determine whether, in the end, we win the three-front war.

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COMMUNITY ESSAY

Speaking of sustainability: the potential of metaphor

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Introduction

One approach to understanding and promoting sustainable consumption is to get the language right. Not just saying “sustainable” and “conserve” and “green” a lot, but speaking in ways consistent with the imperative of living within ecological constraint. Regarding an agenda for social change, philosopher Richard Rorty (1979) put it pithily that, to paraphrase, cultural change occurs not when people argue well, but when they speak differently.

Here, then, I motivate different speaking by focusing on metaphor, not because metaphors add poetic flourish, but because they have power over how humans think and act. Indeed, although “metaphor has traditionally been viewed as a matter of mere language,” write cognitive linguist George Lakoff and linguistic philosopher Mark Johnson (1980), cognitive science indicates that it is best understood “as a means of structuring our conceptual system and the kinds of everyday activities we perform.” What is more, they argue, “It is reasonable enough to assume that words alone do not change reality. But changes in our conceptual system do change what is real for us and affect how we perceive the world and act upon those perceptions.” And metaphors guide action appropriately to the extent they are grounded in experience, direct and indirect, and fit the purpose at hand—here, getting on a sustainable path.

This essay explores how, through metaphor, proponents of sustainable consumption can shift from a worldview that is linear, mechanistic, reductionist, expansionist, and consumerist to one that is cyclic, organic, complex, constrained and, shall we say, productive or self-generating.

The fact that metaphors are inescapable, that they provide normative interpretations and affect how we act, suggests that new metaphors, ecologically grounded ones, can indeed be constructed. The fundamental shifts now underway—biophysical, economic, political—make such constructions imperative.

Starting Points: Value Orientation

As with any analysis or intervention, where you start has a lot to do with where you end up. Concerns for peace and security led to familiar concepts in international relations—balance of power and national sovereignty, for example—and concerns for economic prosperity led to gains from trade and liberalization. The primary starting points for an ecologically and socially sustainable theory of consumption should include the following:

- Concern for irreversible diminution of the earth’s life-support systems;
- Concern for the consequences of ever-increasing throughput of material and energy as means of satisfying publics and resolving (or avoiding) conflicts; and
- Concern for the injustices of uneven distribution of environmental benefits and harms.

These assumptions are informed by an understanding of the nature of the global environmental problematic, an understanding both biophysical and social. On the biophysical side, sustainability theory should start with phenomena such as threshold and synergistic effects, fundamental indeterminacy, and multiple spatial and temporal scales. On the social side, and in parallel to the biophysical, theory should start with explicit assumptions about human behavior. These should include the human ability to do the following:

- Deal with limited predictability and, hence, the necessity of accepting limited human control of natural systems;
- Engage the environment as life-support system rather than as amenity (or luxury good);
- Make long-term decisions, projecting into the distant past historically, even biogeochemically, and into the far future, including ecologically meaningful futures (e.g., those of nutrient, water, and life cycles).

These concerns and understandings of the environmental problematic are in turn informed by *language*. Here, what matters is not just words and phrases, but the underlying concepts and ideas, especially those that connect concrete objects (e.g., food and water) to abstract concepts (e.g., health and growth). Among the most significant are metaphors. And what matters is not just the choice of terms, but the choice of what is important.

Lakoff, Johnson, and others who draw on neuroscience, evolutionary biology, and psychology, as well as linguistics and philosophy, show that metaphors are *embodied*; they connect how we *perceive* with what we *believe*. Metaphors help establish a worldview that guides not just how we see, but how we relate to, our environment. Or as philosopher Erazim Kohák (1976) puts it, “A metaphor is a mask that molds the wearer’s face.”

So metaphors are more than rhetorical or poetic flourishes. Because metaphors structure our conceptual system, how we conceptualize “the environment,” what metaphors we use, does matter, especially when it comes to designing policies, educating the young (and old), and structuring people’s lives with analogies and images and expectations. Indeed, metaphors are devices for establishing a society’s norms and principles, from which we get rules and procedures, laws and regulations. They are, in short, institutions.

Metaphors: Getting the Language Right

“Metaphors may be appropriate or inappropriate,” says sociologist Robert Bellah, “but they are inescapable” (Bellah et al. 1991). Getting them right is, among other things, an issue of good theory and good institutional design. What is more, says Bellah, although “we create institutions, they also create us: they educate us and form us—especially through the socially enacted metaphors they give us, metaphors that provide normative interpretations of situations and actions” (Bellah et al. 1991). Good theory with respect to sustainable consumption is good normative theory. And, for that, metaphors of “the environment,” both biophysical and social, must be developed.

Metaphors guide action appropriately to the extent that they are grounded in experience, direct and indirect, and fit the purpose at hand. In the past, it was building a great nation, spurring a vibrant economy, extending freedoms to distant lands. Today, it is reversing the negative environmental trends,

reducing and then leveling consumption, and getting on a sustainable path. It is living with a lot less material and energy, structuring our lives from the local to the global as if we have just one planet. It is learning to live within our means, not displace our costs onto vulnerable people.

The fact that metaphors are inescapable, that they “provide normative interpretations,” that they “affect how we perceive the world and act,” and that social theorists have long employed “natural” metaphors (the state as a person or organism; the public as a body; global relations as a system with core and periphery, all in a balance of power) suggests that new metaphors, ecological ones, can indeed be constructed (see Wilk, 2010 in this issue). The critical state of the environment suggests that such metaphors *must* be constructed. This is, indeed, a normative issue.

The potential power of identifying and constructing metaphors of the environment lies in the following kind of argument: If you believe that “the environment” is best modeled as a machine (or laboratory or store or battlefield), then it follows that policies should be thus and so. But if you believe “the environment” is best modeled as a watershed (or a neighborhood or spaceship) then it follows that policies should be this and that.

So it is not a “my metaphor is better than your metaphor” game that this exercise engenders. Rather it is an “if you believe” contingent form of argumentation, a form that accepts multiple perspectives and, at the same time, makes possible the intervention of a different, or submerged, worldview. What is more, it opens up new vistas on human-nature relations. And if the sustainability metaphors are at least as compelling as the modern industrial metaphors, then a broad swath of people may shift from the techno-commercial-militarist-exploitative discourse to a sustainability discourse.

Table 1 identifies dominant metaphors of the environment in the current expansionist, consumerist, fossil-fuel-dependent, debt-laden order. I elaborate on two of them—the laboratory and the threat—then use one of their root metaphors—growth—to advance a concept of “adaptive metaphors.” I then posit metaphors of the environment in an ecologically and socially sustainable order. These are not meant to be definitive but, rather, provocative: I hope they will provoke discursive exploration, applying the criteria of adaptive metaphor in the contemporary context of global ecological constraint.

Table 1 Metaphors of the environment in an expansionist industrial order.

Contemporary metaphors of the environment derive from the concerns of historically recent orders, both industrial and geopolitical. They are, for the most part, devoid of ecological content and tend to separate humans from nature. Examples and their implications include the following:

1. The *machine* (nature can be made more efficient, faster, and uniform via the work of rational, atomistic, interest-maximizing actors);
 2. The *laboratory* (nature can be modeled and controlled and new natures can be innovated);
 3. The *bank* (interest accrues automatically and the principle can grow indefinitely);
 4. A *store* (goods and services are available, for a price);
 5. A *park* (nature is preserved, amenities are enjoyed);
 6. The *frontier* (resources are plentiful, many untapped);
 7. A *threat* (nature attacks us so it must be repulsed, vanquished, tamed);
 8. The “*commons*” (nature jointly owned is tragic, requiring a Leviathan or private ownership);
 9. A *colony* (nature is in the periphery requiring resource delivery to the core and waste deposition back to the periphery).
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The Laboratory

One enters a lab, after first noting the warning signs at the entrance, and closes the door, which shuts tight. Inside it is quiet or, at least, the sounds are only those of pumps humming and water gurgling and lab rats squealing. The outside world is gone, as if removed, abstracted away. Everything inside is exactly what the experimenter wants there—the motors and pumps, the wires and chemicals, the rats and feed, all carefully calibrated. Strict measures are taken to banish foreign noises, pesky insects, contaminants. Here “the world” is a piece of the world left behind, but not any piece, as a neighborhood is a piece of a city or a tree a piece of a forest. It is a piece of the components of the outside world, a deliberately isolated piece, a piece that one is to know in great detail, even in its essence. Often such knowledge is then turned to creating a new piece, a chemical, a machine, an organism (a fiber, a fertilizer, a cloned sheep) that never existed in that world outside the door.

The environment as laboratory is thus all about abstraction, reduction, and manufacture. It is about complete understanding of nature’s components, its forces, its laws, all for the purpose of modeling that nature (or piece of nature) and creating a better world, one more intelligible, meaningful, and useful than that in the world “out there.” It is about reducing uncertainty, increasing predictability, about making things safer and more comfortable, more productive and more efficient.

So, in the laboratory metaphor, “the environment” is that which can be closed off, isolated from all else, controlled and manipulated, organized as a source of never-ending new components, new forces, and new combinations, all of which enable a more perfect world for humans, one safer, healthier, more productive, more aesthetic, more comfortable than the unruly world outside the lab, the world our forbearers had to bear.

The fundamental problem with this metaphor is that the lab requires the outside world to build its inside world. It reduces a complex, adaptive system with interdependent actors (that dirty, dangerous, uncomfortable world) to its barest elements, elements without context, independently determined, the subjects of immutable, yet ultimately knowable, laws and forces. At the same time, it presumes that, by knowing its constituent parts, those parts and the whole can be controlled, irrespective of their “natural” context, of the interactive, synergistic, and threshold effects, of cascades of events and emergent properties, in short, a world of limited predictability and limited controllability. What can be controlled in an actual laboratory and what can be created *de novo* is somehow not “the environment” (or lab). It presumes, ultimately, that the benefits of what can be controlled (for higher yields, stronger buildings, greater comfort) will be greater than the risks of that which cannot be controlled (cumulative and synergistic effects, emergent properties, strategic interaction). In the end, the outside world is consumed to produce the inside world, concluding, logically, in the denigration of the “natural,” nonlaboratory world. An extreme example is geoengineering the earth to deal with climate change.

The implicit premise in the laboratory metaphor of the environment—i.e., that everything can be controlled (and *should* be controlled)—can never be tested. The experimentation and manufacture themselves cannot be put in the laboratory and reduced and modeled and manufactured. All of this is to say that the laboratory metaphor cannot have all extraneous variables controlled for, because all ultimately rest on a certain faith, namely, that human ingenuity conquers all. But it is only a faith, subject to no scientific scrutiny (where would the lab be?). It is a faith that could have been sustained in a world of little human impact, of endless frontiers, of harmless expansion, of zero-risk experimentation, of winners everywhere, losers nowhere. But that world is not the

world of the present, if it ever really existed. Today's world is full; its key biophysical variables (population, soil, freshwater, biodiversity) are at their extremes. Its key social variables (income gap, power imbalance, disproportionate harm) are straining societal integrity. The laboratory doors no longer seal closed, the walls are more porous than anyone imagined, the flow of water is uneven and nobody knows why, the chemicals are acting strange, but no one can find contaminants, the rats are mutating at unprecedented rates, and the experimenters are competing among themselves to get grants, publish first, and prove their worth. Everyone is looking inside for answers.

A Threat

Humans have always lived with floods, earthquakes, landslides, wildfires, disease, tornados, hurricanes, and tsunamis. The very same environment that brings great riches, or at least sustenance, brings threats, and such threats can only be partially anticipated and partially prevented, if at all. A threatening environment is an uncertain one; yet, because it is largely uncontrollable, it is for some merely capricious, an environment that engenders a certain acceptance, if not resignation and fatalism: we try to keep out of harm's way, build structures on high ground, require hand washing, restrict campfires. And we build dikes, clear fire lanes, and reinforce our buildings; that is, we try to keep the threat at bay, for a while anyway. But when it comes, it comes. That's life, that's nature (see Hess, 2010 in this issue).

Others do not see it that way. Whether newcomers, transients, or victors, they see such an environment not just as threatening (in some sense, all peoples do), but as anomalous, as the exception for which the rule—a well-behaved environment—must be proved: we build dikes as high as is necessary, construct our buildings impervious to tremors and winds, manage our forests to be fireproof. And if another hurricane comes, we will attack it, knock it off course, blunt its force. Same with solar flux—mirrors in space. This is where a capricious environment becomes a challenging environment, a security threat, an enemy. Here the environment challenges our way of life, in fact our very lives. It is a menace to be guarded against, a foe to vanquish. We decide what the ideal environment is, indeed the “normal environment,” and go to work constructing that norm, shifting tectonic plates, high-energy storms, tinder-box forests be damned.

As a community's conception of the environment shifts from the “natural” yet capricious, on the one hand, to the life supporting yet threatening, on the other, “normal” life becomes that which has no

flood, no fire, no disease, no hurricane. Baseline living is an even flow of water, like water in a pipe; it is a forest that does not catch fire, like a fire-protected building; it is a community where disease does not spread, like a germ-free hospital; it is a state that resists incursions, like a fortress.

Taken to the extreme, the threat metaphor justifies all kinds of incursions, even against “the environment.” In much of the sustainability debate, as progress continues to elude, advocates readily shift metaphors, from the medical (intensive care), say, to the military (“international war on the greenhouse effect,” as former American President Bill Clinton once put it).¹ The military metaphor presumes an “other,” a foe to be vanquished, an attacker to be deterred, a heathen to be civilized. It cannot deal with the proposition that, with a problem as complex and pervasive as unsustainable consumption, all societies and all individuals are implicated, especially those in the high-consuming, industrial North, precisely from where the military metaphors tend to emanate.

Another common construction of the threat is “us,” that is, individuals, as in, “we have met the enemy and it is us.” This construction individualizes what is inherently a collectively generated problem. It says each of us chooses to consume resources and emit wastes. At one level this is, of course, true. But it ignores how powerful institutional forces—norms, laws, regulations, political favors, media attention—shape those choices, how they make oil cheap, packaging ubiquitous, chemical experimentation on the environment normal, and atmospheric deposition costless (Bellah et al. 1991; Maniates, 2002).

How, then, should “the threat” be construed? If the problem is systemic, a proposition all serious students of the global environmental problematic seem to agree on, then the threat itself must be construed systemically. The first-order system of concern is the biophysical, the life-support system of humans and other species, the material system upon which all other systems, material and nonmaterial (such as finance and law) rest. The second-order system of concern is social, the mutual understandings, norms, symbols, rituals, and rules that hold a society together. As with all systems, the biophysical and social each has its set of goals, each seeming independent of the other. In fact, the project of industrialization can be characterized as creating and maintaining precisely that illusion—as a grand effort to separate human functioning from the constraints of nature. Metaphors that do the opposite, that have ecological content and connect humans to nature, social systems

¹ See Cohen (2010) for many more examples of leaders in the United States and the United Kingdom, left and right, using military metaphors with regard to climate change.

to biophysical systems, are in order. Moreover, connecting such metaphors to practices that self-consciously attempt to reconnect would move consumption onto a sustainable path. Among these practices are farmers markets, local food systems, and independent renewable energy production.

Growth

If there were a single metaphor (or a root metaphor for metaphors such as those in Table 1) that best captures unsustainable societies—past and present—it would be *growth*. Its root is both physiological and agrarian: children grow and crops grow. Their growth is unambiguously a good thing. A growing child is a healthy child, a budding contributor to the household economy and larger society, a potential head of the household and perpetuator of the family line. It is not hard to imagine the linguistic coevolution of the species and the positive connotations of growth.

For the agrarian, crop growth is essential to survival, and not just immediate survival. It is essential to surviving the season and, with storage, the year and, with seed and root stock, future years, even generations. What is more, crop growth offers the possibility of surplus with its attendant increase in survival chances, in population, and in overall wealth and power.

In these two contexts, then—childhood and farming—growth is clearly desirable. Applied to livestock, soil, skills, knowledge, art, and freedom, it serves a valuable linguistic function: it says more of these things is good, right, worthy of investment. But like all metaphors, its applications are limited. To delineate those limitations for the purpose of both critiquing contemporary environmental discourse and, most importantly, constructing alternative metaphors, I distinguish *effective*, *powerful*, and *adaptive* metaphors.

An *effective* metaphor evokes the desired image and suggests a desirable path. Here, growth of children and crops is good and so growth of other things is too. An effective metaphor becomes a *powerful* metaphor when its applications arouse high valence motives—e.g., survival, parental protection, national security, social justice—and the metaphor can be stretched without resistance. So, for instance, growth in the economy strengthens the nation (even if the incomes and health of many of its citizens decline). And those left behind still champion economic growth. As this example suggests, though, a powerful metaphor can facilitate societal consensus and mobilization at the same time it exploits the powerless and steers society over a cliff.

A powerful metaphor is thus analogous to a powerful weapon, which can repulse invaders and van-

quish heinous rulers, but can also do great harm to innocents. More generally, powerful metaphors are like powerful technologies; they can be used for good or ill. The real issue is how they are used and how they are constrained. That is, to be appropriate to a broad set of social needs, including long-term survival on this single planet, metaphors must have built-in limits.

Finally, an *adaptive metaphor* does several things at once regarding deliberate action:

- It evokes the desired image and suggests a desirable path;
- It is persuasive, prompting useful behavior;
- It suggests its own limits; and
- It resists stretching beyond its limits.

The growth metaphor would be adaptive, therefore, only if it suggests its own limits and resists the all-too-human tendency to stretch useful concepts and ideas.² Fortunately, we can locate those limits in the growth metaphor's own roots. First, continuous growth is a good thing for a child, but not for an adult (think obesity, cancer). Continuous crop growth is a good thing only if, as harvest time approaches, that growth goes to the seed and fruit, not the roots and stalk (think corn, tomatoes). What is more, these two cases have built-in limits. A child stops growing in height and other dimensions. A crop dies back with the first frost. Unchecked expansion is not an issue over time. As long as the child (not the adult) and the crop (not the inedible parts) grow, they are healthy and they bring health to those who nurture them. This growth-as-maturation metaphor, so applied, is effective, possibly powerful, and certainly adaptive. It is, as specified, a potential metaphor for sustainable practice.

However, and this is the second point, the growth-as-maturation metaphor is misapplied when the target object (or process or system) has no built-in brakes. For an individual or a society, growth in knowledge or artistic expression is limited by the time that can be diverted from subsistence and defense. But growth in money has no natural limit. Nor do technologies like the automobile and the spliced gene. Or if they do, the time lags and displacement of costs are so great that, for practical purposes they operate as if they have no limits. Put in terms of complex adaptive systems, they have positive, self-reinforcing feedback loops, but no negative, dampening feedback loops. And, third, if growth occurs for some and at the expense of others it is also unlikely to be sustained. The feudal lord demands higher

² For an illustration of such stretching and its rhetorical effects, see my "Efficiency: A Brief and Curious History," in Princen (2005).

Table 2 Metaphors of the environment in an ecologically and socially sustainable order.

Metaphors of the environment in a sustainable world would have ecological content and connect human action to the workings of natural systems. They would be adaptive to the extent that they evoke the desired image, suggest a desirable path, prompt useful behavior, suggest their own limits, and resist stretching beyond these limits. Examples and their implications include the following:

1. *Spaceship earth* (the environment is the life-support system of humans and other species);
 2. *Planet earth* (there are limits to growth);
 3. The *watershed* (human action happens within a landscape in which there is an upstream and a downstream);
 4. A *scale* (human-nature interactions are in balance and have the right size);
 5. *Saving the seed* (restraint in short-term gain leads to long-term security);
 6. A *network* (interactions occur among complex, adaptive systems with emergent properties and limited predictability, natural and human);
 7. The *tide* (the world is cyclic, ever renewing, ever changing, punctuated by extreme events);
 8. A *homestead* (one's home provides food and shelter and is embedded in a larger community);
 9. A *gift* (no one owns or controls the sources of the life-support system);
 10. The *national banking system* (systems are not only complex and changing, but they exhibit nontangible elements such as trust and ecological integrity).
-

yields but takes the gains for himself, engendering yet more resistance from the peasants.

I nominate additional metaphors for sustainability in Table 2. Once again, these are not meant to be definitive, only provocative and suggestive. Some are more adaptive than others. But they may well be useful starting points, along with growth-as-maturation, from which a language of sustainability can emerge. It is in such language that understanding and action takes place. Or, to return to philosopher Richard Rorty (1979), fundamental cultural change occurs not when people argue well, but when they speak differently.

The planet's life-support system is changing, fundamentally. For that, fundamental cultural change is needed, urgently. One ingredient is new language. Indeed, we need to speak, and act, differently.

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BOOK REVIEW PERSPECTIVES

Thomas Princen, *Treading Softly: Paths to an Ecological Order*

MIT Press, 2010, 224 pp, ISBN: 0262014173

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Sparking the imagination. Creating images of a new world in which we “live well and well within our means.” Convincing us that a new normal is coming. Laying the groundwork for a new ecological order. These are among the ambitions of Thomas Princen’s *Treading Softly*.

This wide-ranging and engaging book is, in Princen’s words, a work of “normative theorizing”—an exercise in “what can be” and “what should be.” It is hopeful, but not sugar coated. Princen rejects gloom-and-doom scenarios as well as the seductive view that, with a little greening and better technologies, economic growth can continue indefinitely in dematerialized form. The latter idea is a “fantasy,” writes Princen, who adds that the book is not for those who think adequate solutions can be found through green buildings, fuel-efficient cars, new fuels, geo-engineering, or carbon capture and storage. The required changes will not be easy or convenient, he argues, and will even require some “positive sacrifice,” yet could still be rewarding.

One of Princen’s goals is to expose the “traffic control measures” that keep people on the current growth-based path—ideas such as we must “move forward,” “consumers rule,” and “technologies save.” Heightening awareness of the role such ideas play in blocking thought about alternatives is an important contribution of the book.

Economic growth is said to hinge on confidence. Princen encourages readers to see the growth economy as a confidence game or, alternatively, a house of cards. The system’s defenders point upward to each new level of cards, while Princen rightly directs attention to the bottom, where cards are being taken away to be added to the top. All signs point to the ecological foundations being unable to support ever-rising consumption levels.

But if people cut back their consumption, won’t they damage the economy? This question prevents many from imagining any alternative to a growth-based system. Princen turns the question on its head

and asks how can we consume in a way that does not undermine the economy’s ecological foundations? To reframe the question is to put the burden of proof on the defenders of growth. It is to ask, “How much is enough?” Princen suggests that we can “consume, but only what renews, not the basis of renewal.” He notes that we can find similar ideas of sustainable practice in time-tested maxims such as “don’t eat the seed corn” and “spend the interest—not the principle.”

Principles matter greatly for Princen, who highlights the principles that underlie the existing economic order—efficiency, growth, consumers-rule, “out-of-sight-out-of-mind,” “bigger-faster-cheaper”—and finds them lacking. A new economy, he emphasizes, requires new foundational principles that embrace a notion of limits. These include: intermittency (“ecological services need not be continuous, let alone ever-abundant and cheap”), sufficiency (“a sense of enoughness and too-muchness”), capping (limiting human activities that are inherently constrained by biophysical conditions), and the source principle (“it is prudent to preserve the source”).

An economy based on such principles would not be a “mining economy” that assumes we should use up resources, and even species, at an “optimal” rate. Nor would it be a consumer economy that emphasizes “getting good deals, employing others, and substituting technology for disciplined work and care.” Rather, it would be a “home economy” that is “grounded in place.” It would also be a “producer economy” in which people are “defined not by their shopping, but by their producing, by their ability to buy as little as possible.” The norm would no longer be selling one’s labor, but self-production, i.e., self-employed individuals or self-organized communities deciding what is produced. Rather than maximum output, the goal would be to provide opportunities for high levels of satisfaction through meaningful work. Princen’s historical referent for this vision is late 19th century America when much of the economy was led by artisans, skilled craftspeople, small shop owners, and independent yeoman farmers. A return to such independent working would create built-in limits on excess consumption, he argues, as humans tend to do

only enough work to meet their needs when they enjoy real autonomy.

Above all, Princen sees the need for worldviews and a new language that enable living with nature. He emphasizes the role of metaphors in establishing social norms and principles, which form the basis for procedures, laws, and regulations. A new ecological order thus needs to replace metaphors of the environment as a “store, machine, colony, laboratory, or enemy” with alternatives such as “a life-support system, the thin skin of life, a homestead, a banking system, or even a gift.” A valuable contribution is the idea that a wholesale conversion to an entirely new worldview is not necessary—one can start by highlighting ecologically sound elements of existing economic and mechanistic worldviews (e.g., spend within one’s means).

Princen does a great service in going beyond the oft-heard critique of economic growth and reflecting seriously on alternatives. His outlines of a new economic practice and language raise several questions for further debate. Does his proposed shift in emphasis from a consumer to a producer economy go far enough? Are production and consumption not two sides of the same coin? Advocates of work-time reduction have argued for expansion of the realm of free time beyond both production and consumption—a central aspect of many visions of a post-growth economy that is marginal to Princen’s image of the future.

In privileging production over consumption, Princen discards any role for alternative models of consumption. He rejects the distinction between “good consuming” and “bad consuming,” and argues that “all consuming is using up.” Good reasons exist to be critical of much of what passes for green consumption; however, ecologically motivated citizen consumers still deserve acknowledgement as players in the transition to sustainability. For example, politically conscious demands for local products have been important to efforts to create new models of sustainable food provision (see, e.g., Seyfang, 2009).

Princen’s work is valuable in highlighting the need for a new language, although he perhaps puts too much emphasis on the realm of ideas as the source of social change, neglecting the constraints and opportunities resulting from changes in contemporary capitalism while sidestepping an analysis of power. (“To question the assumptions, to challenge prerogatives, is to crack the belief system. And then it

all falls down,” he writes optimistically.) As for his proposed alternative language, a wide range of deeply personal reactions is possible. No doubt many readers will be inspired by Princen’s “home economy” vision, but it can come across as austere and stern, with its focus on “disciplined work,” “sacrifice,” and being “grounded in place.” (The last time I felt “grounded in place” was when my parents punished me for some youthful transgression.) One could argue that many of us in the high-consuming parts of the world deserve a good grounding, but other, more positive framings of low-consumption living are also possible, such as Juliet Schor’s (2010) vision of “plenitude.” More debate on the most appropriate and effective language would be welcome.

Talk of a home economy also calls out for gender analysis. Who will be responsible for the “making, creating, caring” that characterize a home economy? Women have struggled to escape the confines of an earlier version of a home economy in which they were the homemakers. How can a home economy be different this time and represent an egalitarian alternative?

As the epoch of seemingly limitless expansion comes to an end, *Treading Softly* represents an important springboard for debate about what comes next. It finds an appropriate balance of “realistic hope,” going beyond the easy answers so often put forward in environmental debates. Above all, it succeeds in encouraging readers to imagine a possible new world, and in emboldening us to get to work in creating it.

About the Author

Anders Hayden is assistant professor of environmental politics at Dalhousie University. He is the author of *Sharing the Work, Sparing the Planet: Work Time, Consumption, and Ecology*. His recent research compares the social and political responses to climate change in Canada and the UK, with an emphasis on the ways in which sufficiency-based ideas are emerging despite the strong growth-orientation of contemporary societies.

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BOOK REVIEW PERSPECTIVES

Annie Leonard, *The Story of Stuff: How Our Obsession with Stuff Is Trashing the Planet, Our Communities, and Our Health—and a Vision for Change*

Free Press, 2010, 352pp, ISBN: 143912566X

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The Story of Stuff by Annie Leonard is an expanded and more in-depth version of her 2007 Internet film sensation “The Story of Stuff.”¹ The 20-minute, animated film has been viewed over 10 million times and explains the harmful effects of capitalist systems of production, consumption, and disposal on the environment, economy, and health. Although not necessary, viewing the film before reading the book might be a useful starting point.

The volume is divided into seven sections including: an introduction; five chapters based on the life-cycle of “stuff”—extraction, production, distribution, consumption, and disposal; and an epilogue that summarizes Leonard’s prescription for a more promising future. Within the chapters, Leonard does much more than follow the life-cycles of various goods (which she does with “stuff” like laptops, tee shirts, and aluminum cans). She also briefly delves into a variety of concepts, issues, and historical events within each of the chapters, expertly tying these back to the chapter headings. The breadth of topics covered in each chapter is extensive, representing the main strength and/or weakness of the book depending on the audience. For example, in the “Distribution” chapter Leonard briefly explains all of the following: supply chains, just-in-time production, branding, the GoodGuide to consumption, transportation pollution, the distribution systems of H&M, Amazon, and Wal-Mart, the perils of big-box stores to urban sprawl and communities, the North American Free Trade Agreement (NAFTA), colonization, the International Monetary Fund (IMF) and World Bank, Third World debt, the World Trade Organization and protests against it, the actions of the United States Agency for International Development (USAID) in Haiti regarding farming, the “water war”

in Cochabamba (Bolivia), Bill McKibben’s book *Deep Economy*, and local food movements.

While this shallow analysis of many economic and environmental issues might be off-putting to professionals versed in environmental or social justice issues, the book provides an useful introduction for readers new to these issues and would therefore be an excellent addition to high school or university curricula. As well, one of the major strengths of Leonard’s work is her ability to tie seemingly disparate issues together within and across chapters. This might encourage even veterans of the sustainability field to more consciously connect their own work to a variety of local and global environmental, justice, health and labor issues and to collaborate across these imagined divides.

One of the main highlights of *The Story of Stuff* is Leonard’s writing style, which is friendly, humorous, and widely accessible. She intersperses numerous facts and statistics throughout the book with references to popular culture, cartoon-like illustrations, and personal anecdotes from her many adventures as an environmental activist following waste around the globe. Sustainability advocates should take note of how Leonard manages to clearly explain concepts (such as the IPAT equation, the resource curse and criticisms of gross domestic product, and the background on well-known historical events—such as the 1984 gas leak in Bhopal and the Ogoni’s resistance to Shell in Nigeria during the early 1990s). Another highlight of the book is Leonard’s ability to keep her tone relatively upbeat despite the depressing subject matter by sharing signs of hope and alternatives throughout the chapters.

From the title of the book one might think that Leonard would highlight sustainable consumption as a main alternative for confronting the environmental, economic, and social problems with “stuff” that she identifies throughout the book, but this is not the case. When it comes to sustainable consumption Leonard is not optimistic. Although she promotes consuming less and being more aware of where and how products are made and disposed of, she chides

¹The film can be viewed for free at <http://www.storyofstuff.com>.

sustainable consumption as being too individualistic. She laments the loss of citizen-politics to the consumer-dominated politics popular today. Many of the solutions Leonard champions are “upstream” rather than “downstream” initiatives (for example industry-wide taxes on the amount and type of product packaging used). She ultimately claims that individual behavioral adjustments are useful, but not large-scale or ubiquitous enough to provide the kinds of changes that our harmful capitalist system warrants. The kinds of changes that we need, she asserts, are based on entire paradigm shifts.

In the Epilogue of the book, Leonard outlines four such shifts that she hopes will lead to a more ecological and equitable future for all. These include: 1) Redefining progress (i.e., using a well-being index rather than a growth index); 2) Doing away with war (i.e., redirecting military spending to social and environmental needs); 3) Internalizing externalities (i.e., environmental, health, and otherwise); and 4) Valuing time over stuff (i.e., working fewer hours, buying less stuff, and participating in more community-oriented activities in this newly acquired spare time). While these ideas are not new (see e.g., Victor, 2008; Schor, 2009), they may be to Leonard’s intended audience. Her hope is that she will induce readers to get personally involved in lobbying for these broader paradigm shifts through nongovernmental organizations, communities, or government.

The possibility of Leonard convincing readers of this need and actually enabling these paradigm shifts is where I fear a potential downfall to *The Story of Stuff* lies. There are two fronts on which Leonard falls a little flat in her argument. The first is the fact that the book is often very anthropocentric in its tone; for example, she argues for the protection of rain-forest species on the grounds that they may have potential cancer-fighting properties for humans. While this could be an editorial choice, to speak to certain audiences, I am concerned that this tone may not sit well with some readers and more importantly does not disrupt many of the paradigms with which Leonard herself is concerned (for example the com-

modification of nature). The second downfall is the incomplete attention paid throughout the book to issues of privilege and inequality. While Leonard is quite diligent in discussing global inequalities and injustices, she largely overlooks the potential hardships that many readers may face in finding the time, information, and resources to act on her many recommendations. More attention to these issues, as well as to potential opportunities for collaboration across spatial, educational, and socioeconomic boundaries, would have made Leonard’s excellent argument even stronger.

In sum, *The Story of Stuff* is a terrific book in terms of its broad overview of the life of our “stuff” and the connections this “stuff” has to society, the economy, and the planet. However, this book is not a sufficient reference for an in-depth understanding of any single issue. Leonard’s strength is most definitely in the accessible and insightful way in which she distills and brings together enormous amounts of information about environmental, economic, and health issues while suggesting alternate paths for a more sustainable and just world.

About the Author

Roberta Hawkins is a PhD Candidate in the Graduate School of Geography at Clark University. She is interested in thinking about consumption through the lenses of feminist theory and political ecology. Her dissertation research investigates the various North-South connections between people, places, and natures that are highlighted and hidden through ethical consumption discourses.

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BOOK REVIEW PERSPECTIVES

David Boyle & Andrew Simms, *The New Economics: A Bigger Picture*

Earthscan, 2009, 160pp, ISBN: 184407675X

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The struggle for the soul of economics is
picking up pace.

—Boyle & Simms, 2009

Consider a world where the gap between rich and poor is slight, where increasing numbers of people chose to “downshift” (work less and spend less), and where the environment is no longer threatened by demands for escalating economic growth. Welcome to the world of the new economics. The economy as we know it, with its intrinsically flawed system of values and priorities, is wreaking havoc on social capital, ecological services, and human well being.

David Boyle & Andrew Simms wrote *The New Economics: A Bigger Picture* in the midst of the 2008 financial crisis. It has the same spirit of excitement over the demise of growth economics (in the wake of the meltdown) of left-leaning critics the world over. For example, the authors write, “The American model of economics has failed as finally and spectacularly as the Soviet model did in 1989.” It is likely that few people would now agree that the American model of economics failed for the last time in 2008. Nonetheless, it would seem that had governments around the world adopted principles central to the new economics as the foundation for their fiscal and social policy, the crisis could have been averted.

This readable, concise, and informative book presents (for this reader), the most comprehensive account of the “new economics” written to date. In the words of the authors, the new economics is:

[E]verything that follows from the central discovery that money and wealth are not the same, that money is a means to an end...[T]he new economics subsumes the old idea of an economic science into broader ideas of the way the world works. It resumes

its proper place as a subset of biology or psychology in the way it explains the planet and the way people behave. It becomes the study of how human beings, and the places they live, can reach their full potential—using the far broader assets that they have at their disposal, which are not always reducible to money.

The “new” economics is contrasted, of course, with current economics. The criticisms of modern-day economics are probably not new to those likely to buy this book: economics ignores the planet, gross domestic product does not measure “true” wealth, economics falsely assumes perfect information and rational individuals, it encourages consumption for its own sake, and it promotes and relies on debt and indenture. But perhaps most damning of all, our modern economics is without a moral compass.

The authors include an interesting discussion of morality in this book. As many are no doubt aware, the impetus for the initial establishment of the field of economics was to address moral questions. However, as the authors write, we now have:

[A]n economic system that is partially blind, has no moral compass, and is destructive of the environmental conditions on which civilization depends. It is an economics that assumes there is no morality save for supply and demand. Economics may have begun as a branch of moral philosophy, but it ignores the moral aspects of humanity, and other human aspects, as inconvenient for its theories.

One objective of the new economics is to acknowledge the interdisciplinary potential between economics, the natural sciences, and other human sciences. Indeed, “[b]y putting economics back into its proper psychological and biological context, the new economics tries to return to [economics’] moral roots.” As a sociologist, I was somewhat surprised and disappointed that the authors do not address the

potential for collaboration between the new economics and sociology. The sociological perspective could provide the new economics with better understanding of long-term, large-scale socio-cultural behaviors, in particular by drawing on analyses of power relationships and imbalances. While the book certainly offers a number of interesting and technically sound solutions, the implementation of such programs is bound to meet with resistance from those who currently profit from the existing system, as well as those who expect to profit from the system in the future. The authors acknowledge some of the barriers to system change, but a sociological lens could prove quite useful nonetheless.

Boyle & Simms are extremely detailed in noting some of the changes necessary. In their words, we:

[R]equire a range of different institutional changes, including new models of financing, prices that genuinely reflect the impact of human and environmental costs, and a new kind of ownership structure that no longer overpays investors. These...need to be joined by a new global network of regulations and institutions to replace the creaking network we now have.

The solutions offered are nested within a series of easy-to-read chapters, each of which poses an “imponderable” question (i.e., Why Does Britain Import the Same Number of Waffles it Exports?). In answering the question, the authors critique certain ludicrous features of the current economic regime and conclude with “new economics solutions,” often including examples of instances where the solution has been used. In this respect, this book offers a refreshing change from the myriad books that critique capitalist economics without proffering any alternatives.

For example, in the chapter “Why are Cuban Mechanics the Best in the World?” the authors explore issues like planned obsolescence, skewed pricing (such that it is often more expensive to fix things than to replace them), and energy and resource waste.

As in each chapter, the authors present several new economics solutions. In this case, the authors pose four interrelated policies to address the current failing: reward people for recycling and reusing, invest in recycling intermediaries, create new repair infrastructure, and evaluate new projects by their impact on money flows. The appendices also offer a series of short- to long-term strategies for transforming the current economic system and a number of strategies from the New Economics Foundation are briefly defined. The appendices are a highly useful resource for policy makers and others who would like to play a role in bringing new economics policies to light.

The authors see hope in our current circumstances, which they view as three interrelated crises: the ecological crisis, the human crisis, and the spiritual crisis. These broader issues are made manifest in three immediate crises: in credit, climate, and energy. Where there is hope is that the crisis represents, “paradoxically, an opportunity. Its sheer seriousness compels some response.” However, as acknowledged earlier, even the massive bailout of financial institutions was not enough of an inducement to stimulate large-scale reform to our current institutions. While it seems that was the authors’ hope at the time of writing, they also recognize that the transition to the new economics will be more effective as a slow evolution. To change the current system, they argue, the “new economics [must] provide an alternative to the system that works better and is more attractive for people and planet.” By clearly stating what some of these alternatives could be, the authors play a valuable role in advancing this transition.

About the Author

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BOOK REVIEW PERSPECTIVES

Horace Herring & Steve Sorrell (Eds.), *Energy Efficiency and Sustainable Consumption: The Rebound Effect*

Palgrave Macmillan, 2009, 272 pp, ISBN: 0230525342

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Most so-called lists of “ten easy things” that one can do to reduce greenhouse-gas emissions usually start with changing a light bulb from incandescent to compact fluorescent, an adjustment that saves both energy and money. A no-brainer, right? Well, not necessarily. Studies indicate that people tend to increase their energy use when they switch to more efficient lighting, thus partially attenuating the energy-efficiency gains. The same reaction applies to other activities: fuel efficiency in cars promotes more driving or shifting to heavier models and fuel efficiency in home-heating systems induces people to raise the indoor temperature.

A similar phenomenon takes place in the industrial sector, and economists have known about it since the early days of the Industrial Revolution. In 1865, the British economist William Stanley Jevons articulated what has since come to be known as “Jevons’ Paradox” originally based on a study of the impact of the steam engine and electricity use in industry on the demand for coal. The phenomenon was restated by contemporary economists Khazzoom and Brooks, and others, based mostly on modeling. The explanation goes something like this: improvements in energy efficiency of so-called general purpose technologies (technologies with many potential applications, such as steam engines, electric lighting, or computers) lead to proportionally greater economic growth and then to subsequent increases in the overall demand for energy. This perverse outcome is attributable to the fact that technological changes reduce the energy cost of producing useful work and lead to changes in industrial processes in multiple sectors, methods of industrial organization, further technological innovations, and more affordable industrial and consumer products. Extrapolating Jevons’ observations to today’s consumer society, these productivity increases tend to lead to greater energy demand and, over time, emergence of expectations of

greater comfort and luxury in everyday life, as well as to the invention and marketing of increasingly sophisticated (and energy intensive), yet affordable, consumer products.

If Jevons’ Paradox, better known as the rebound effect (RE)—the partial negation of energy-efficiency gains—or the backfire effect (absolute increase in energy consumption) are indeed significant, their implications for current policy making with respect to energy and climate-change mitigation are profound. The ongoing debate is framed by four general approaches: a shift to renewable energy sources, an emphasis on conservation through energy efficiency, an effort to reduce demand, and an embrace of end-of-pipe technological fixes such as carbon capture and storage. Of these alternatives, energy efficiency appears to offer the easiest and least risky way forward and is therefore of great interest to politicians and policy makers. A significant rebound effect could weaken the efficacy of this option.

Given the importance of understanding the rebound effect within the context of the energy and climate debate, there has been a remarkable paucity of research to elucidate the mechanism by which it occurs in the present economy, and its magnitude. I therefore welcomed the new book on the subject entitled *Energy Efficiency and Sustainable Consumption: The Rebound Effect* co-edited by Horace Herring & Steve Sorrell. This brief volume, despite the multiplicity of contributors, is written with consistent clarity and provides a logical evolution of ideas from specific to more abstract. It defines and clarifies concepts, and provides both raw empirical data and useful interpretation. All of the “economic” chapters can be read at two levels. Economists and econometricians doing quantitative research in this area can delve into the details of the studies described here and form their own opinions about the methods, data sources, and analytic tools. For non-economist readers like me, these chapters provide the essentials: a literature review, explanation of the nature of the argument, quantitative data, and a critical commentary on the uncertainties.

Part I of the book covers direct rebound effects among consumers, focusing largely on fuel efficiency

in cars and home-heating units. A review of several studies carried out in the United States estimates the RE to be relatively small—between 10 and 30%—and declining inversely to household income. This finding provides support for policies that encourage energy-efficiency improvements in dedicated consumer technologies (although one very recent German study that is included in the book comes up with about 60% RE for automobile-fuel efficiency). It was at this juncture that I wish that the authors had included another type of indirect rebound effect—one that in the book is relegated to Part III: the case when consumers save time (not money) by outsourcing certain activities to more efficient agents (for instance lawn-mowing services that can afford to use more energy-efficient equipment than individual home owners). But the energy savings would be attenuated (or wiped out altogether) if the leisure time so created were spent on energy-intensive activities (e.g., air travel). This is an important point because it could undermine the enthusiasm that exists in some circles for a product-to-service shift as ecologically desirable.

Part II of the book, focusing on industry, makes an argument that energy-efficiency improvements in general purpose technologies are an important driver (or, according to two contributors, the principal driver) of economic growth and thus increased demand. The effect *can* be studied, quantified, and modeled, although its value will always vary among studies, owing to the complexity of the phenomenon and the sensitivity of models to assumptions, data sources, metrics, analytic boundaries, and economic sectors under study. Unfortunately, most of the debate is based on modeling rather than on empirical data. A handful of modeling studies estimates the RE to be 40% or more, with half of these studies predicting a backfire, especially when energy efficiency also involves decreased capital and labor costs to industry.

It becomes quite clear at this point in the book that climate and ecological sustainability policies based primarily on pursuing energy efficiency in industrial processes and consumer products will not deliver the hoped-for reductions in overall energy use, while leading to increased consumption of materials, water, and other ecologically sensitive inputs. It may even backfire in the long run. So what would be a wise course of action by national governments and global institutions? This question is addressed in Part III. There are incremental steps that policy makers can take to counteract the direct RE among consumers, such as shifting fee structures (calculating insurance premiums based on miles traveled and allowing negative feedbacks (e.g., traffic jams and parking frus-

trations) to control unwanted behaviors such as the increased use of fuel-efficient cars).

But when it comes to addressing the economy-wide RE, the response must be more structural. We need to transition to an economic system that channels the energy-efficiency gains into increased prosperity and decreased ecological damage without promoting economic growth. One of the book's contributors, Jørgen Nørgard, articulates it best: "A more valid approach would be to give first priority to beginning the long-term economic, social and psychological transition towards a steady state [economy]," meaning "a steady state stock of material artifacts needs to be maintained with a minimal throughput of resources...and then along the way gradually implement more energy efficient technologies." In other words, it is time to acknowledge the elephant under the rug: the economic growth paradigm.

Nørgard, along with Donella and Denis Meadows, may have been one of the first to question the economic growth paradigm from an ecological perspective (the above quote comes from a 1974 publication by Nørgard), but it is only now that these ideas are gaining serious traction. Peter Victor's seminal 2008 book *Managing without Growth* and Tim Jackson's 2009 report and book *Prosperity Without Growth* (the works of these authors, to my surprise, are not cited in this volume), shows, based on Victor's conventional economic modeling for Canada, that it is possible to achieve a steady-state economy without causing major social dislocations.

But how do we get there from here? It is on this question that *Energy Efficiency and Sustainable Consumption* stumbles. It brings together some of the familiar ideas such as: replacing conventional measures of gross domestic product with broader measures of social progress, such as the Genuine Progress Indicator and the Happy Planet Index, as well as adopting social policies that encourage people to trade some working hours and income for more leisure time (of course, hoping that the additional leisure time is not spent on international travel or more car driving). Apparently, many Danes have embraced the income-for-time tradeoff. But much more fundamental structural changes will be needed to avoid potentially disastrous consequences of steady state-oriented policies, Herring warns, including major reforms in current monetary policies. And it is not clear from what direction the power for change will come. After dismissing voluntary simplicity and related social movements as being of minor significance, Herring leaves open the question of the role of collective bottom-up social action.

The major accomplishment of this book is to bring together in a single volume three threads of thinking, analysis, and activism that until now have

rarely crossed: macro and micro economic analysis, discussions of the economic growth paradigm, and work on consumption. Further analysis and debate is left for others to continue. The time is right. During the past half-dozen years, a small, but prolific, group of European and North American researchers has contributed greatly to our understanding of the cultural, political, and economic context and social practices associated with consumption, and these ideas are diffusing into contemporary policy debates. The growth paradigm is being questioned by mainstream thinkers.

Three things are clear to me after reading this book. First, a steady-state economy, combined with energy efficiency and renewable energy technologies, is necessary. Second, the change will be gradual and driven by multiple drivers: social movements that will reframe understanding of the good life, social policies oriented toward reduced working hours, policy-driven changes in economic structures and dominant technologies, a crisis or two, inspired leadership, and some good luck to boot. Third, some societies provide a more favorable climate for the shift than others. People will adopt the income-for-time

tradeoffs only when they feel prosperous and secure. Perhaps the rich, safe, and very equitable Danish society will be the first one to seriously try the steady state-oriented policies. I have little hope for this happening any time soon in the United States, where members of the middle class increasingly scramble to earn enough to provide college education for their children, pay for healthcare costs not covered by insurance policies, and save money for possible unemployment and uncertain retirement.

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BOOK REVIEW PERSPECTIVES

Daniel Goleman, *Ecological Intelligence: How Knowing the Hidden Impacts of What We Buy Can Challenge Everything*

Broadway Business, 2009, 288pp, ISBN: 0385527829

Robert Rattle

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Mired in the misty shroud of producer profiligacy, identifying a more virtuous product can be a consumer nightmare. With more questions of legitimacy than websites that rate the virtuousness of products, new scientific findings, data gaps, discordant policy environments, and weak regulatory environments, virtuous product identification has become a moving target. At best, identifying a virtuous product might represent a weak endorsement of the marketplace to deliver green products, and the information superhighway to fill an information void with a viable service.

If Goleman is correct, this informational option will become much more practical, convenient, widely used, and accepted in the consumer decision-making process. More than just widely employed, Goleman asserts in his book *Ecological Intelligence*, that the use of life-cycle analysis (LCA) will simplify the process of virtuous consumer decision making at the point of sale to such an extent that it will drive virtuous production around the globe. Consumers can use their cell phones and computers to learn about a product's rating details and make choices accordingly. That is encouraging, because at present there are very few consumers likely to pursue and identify a virtuous product, especially when success of finding such a product is so low and the effort required to get there so high.

Information—tremendous volumes of which are now available—can be used to compile, identify, assess, and rate a product's impacts on the environment or society. Employing LCA for this purpose, and making the results available to the consumer at the point of purchase is, Goleman argues, the best approach to achieving a more sustainable planet. Goleman asserts that consumers would be able to, with a convenient rating system, match their values to products. Left unexplained is, with a wide diversity of values, how a comprehensive rating system would

distill the vast amounts of—often conflicting—data to make sense to the consumer.

For the average consumer, however, this book will likely prove an eye-opener—to learn the tremendous number of steps, complex processes, chemical stews, and environmental, social, and health impacts involved in producing, using, and disposing of even the most mundane everyday-life purchases. It may even move some reader-consumers to demand better labeling and “green” classification to help them make their purchase decisions a little easier. This trend is now evident, and certainly companies that learn to market their wares in accordance with these emerging value-laden consumer criteria (or for the cynical, adjust those criteria to match their production needs) will achieve a competitive advantage in the global marketplace. But will that advantage in and of itself, achieve a more sustainable planet?

Despite the examples Goleman employs to illustrate where producers have responded to consumer pressures to change their practices, the general assumption that consumers can have a significant influence on the decision-making architecture that defines our consumption and production practices remains ambiguous. Will consumers respond and avoid products, such as cars with faulty braking systems, or genuinely bypass unsustainable processes, such as resource extraction that fails to take necessary precautions with disastrous results when things go terribly wrong—or even more disastrous results when things unfold as intended?

Which raises a serious issue overlooked in this book: will shopping and consuming our way to ecological sustainability even be possible? It just does not seem plausible that another two billion consumers, each with a cacophony of electronic gadgets providing current information on the virtuousness of their next six-month upgrade purchase will offset the social reason for which they are replacing a perfectly operational gadget in the first place. As McManus (1996) suggested, these questions need to be debated to redefine consumerism “in ways not limited to the global management of contemporary capitalism in a green framework.”

That being said, Goleman has struck a very interesting chord, one that would have been instrumental were this debate explored. While LCA may prove essential in our complex world of global trade where the production and disposal of consumer artifacts are shaded and displaced from consumer decisions, will filling that information void answer the question of sufficiency?

Goleman touches, however fleetingly, on this essential debate: the market incentive for establishing a simple useable rating system of virtuousness. Where there is a profit motive, ratings cannot fully be trusted or, to use Goleman's own term, radically transparent. Yet that same radical transparency fails to lift the shroud concealing this market incentive. As abruptly as this debate could begin, it evaporates, making the approach—one that assumes the need to consume without bounds and to plead the case for making that a more fully informed process—somehow arcane.

Of course humans will always be consumers, but one needs to question the level of that consumerism. This book does not. While it remains an important ingredient for a more sustainable planet, the volume's discussion of LCA and its power to convey relative information on the sustainability of consumer choices would have been well served by including a discussion about the need for consumerism in the first place. How might we transform consumer-producer relationships that urge ever higher the levels of consumerism on our shrinking global planet, rather than alter existing relationships merely to deliver more green products?

Moreover, if LCA produces tremendous volumes of information that can be distilled down to the best products for various categories (social, environmental, and health, for instance), why not simplify the consumer process and list each product for each service available in the marketplace. Would that step not reinforce the shopping experience as the purely utilitarian process most economists currently believe it to be? To challenge that utilitarian process would undermine the value of objective virtuous information Goleman so desires. Why, then, not set market regulations at the level of virtuous products that meet the most rigorous criteria? With a sweep of the hand, Goleman discounts regulation as too cumbersome a process to achieve his radical transparency. It seems regulating products to match rigorous criteria opens the Pandora's Box of values. Not so much what products consumers value, but how societies value

the marketplace. Failure to include this rich discussion that informs a critical element of sustainable consumption is a serious oversight of the book.

Despite his desire for radical transparency, Goleman fails to explain why consumers would—or in fact do—trust a “green” claim. Consumers clamor for green products, despite the widespread practice of greenwashing affecting 98% of product green claims (TEM, 2009). This raises a provocative question: a green product may be something consumers want, but do they really want information that tells them the level of greenness? Yet perhaps more provocative: will producers act to provide more green products or simply engage in additional greenwashing to gain market share? Despite the fact that information exists cautioning consumers about green claims, product promotions continue to exceed performance, and consumers continue to exceed ecological and household debt levels in search of elusive green products. Information, it appears, can both serve and thwart virtuousness.

From the standpoint of sustainable consumption, establishing a better approach to assuage consumer guilt will bring little relief to the deluge of toxic consequences despite—or perhaps due to—an ever expanding deluge of virtuous products.

This book left me with more questions than answers, and questions that would prove stimulating to engage more widely. Even if a complex radical transparency is not forthcoming in the near future, *Ecological Intelligence* will hopefully serve a vital role by raising a range of questions essential to sustainable consumption.

About the Author

Robert Rattle is an independent researcher and consultant. He studies and consults on various aspects of sustainable consumption and ecological integrity, focusing on institutional and societal mechanisms of consumption behavior, social determinants of health, Health Impact Assessment, and Internet and communication technologies.

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BOOK REVIEW PERSPECTIVES

Serge Latouche, *Farewell to Growth*

Polity Press, 2010, 180pp, ISBN: 0745646174

François Diaz Maurin

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What emerges from Serge Latouche's book, *Farewell to Growth*, is that the global crisis of the modern world is first and foremost a crisis of civilization. Indeed, the "Western" view of humanism brought forth the concept that "humans are superior beings who have natural rights over other species and over nature." This perspective has led us to base our societies on the paradigm of economic growth that now controls each and every aspect of our lives. For that reason, growth can be considered as the main cause of the global crisis. Therefore, renouncing growth requires us to relinquish some aspects of our human nature; in other words, to change to another way of *being* (Ehrenfeld, 2008). This is obviously not the easiest thing for us to do, especially when we realize that our imaginaries are deeply "colonized" by the growth paradigm.

Latouche, a French economist, is regarded as a "prominent defender of [the degrowth] school of thought" (Schneider et al. 2010) and here he does not mince words. His intent is clear from the very start: "[T]hose of us who live in the North already consume too much." Shortly afterward, he provokes us directly by adding that "we would be healthier if we went on a diet," as if we were suffering from obesity. This ironic and provocative tone is second nature for Latouche who supports the idea that we can learn a lot from ecological and social disasters. For instance, he frequently speaks of the "pedagogy of the disaster" (*pédagogie de la catastrophe*). The author uses this approach to "decolonize our imaginaries" from the growth paradigm. But above all, he aims to demonstrate that the degrowth project is at once "desirable, necessary, and possible" if we want to tackle the global crisis.

Degrowth appears to be desirable because growth really is undesirable. Indeed, as Latouche reminds us, "there are physical limits to growth." As the Club of Rome was already pointing out in 1972, and quoted by Latouche, "the never-ending pursuit of growth is incompatible with the planet's 'basics.'" In one word, growth is *unsustainable*. Nowadays, de-

spite all the "new and damning reports [that] are published every day," we continue to ignore the "common sense diagnosis" that "the earth's capacity for regeneration can no longer keep up with demand." Latouche's statement is true: there is no other option than a crisis when throughput-consumption flow overcomes the biosphere's capacity for regeneration. The problem is not only that we do not *understand* the fact that this situation is unsustainable, but, as he argues, that we *refuse* to recognize the inevitable effects of such incompatibility on our consumption and production practices because it would mean questioning our way of life, and so, our human nature.

On the social aspect, both growth and degrowth share the goal of living better. However, one has to admit that this does not occur anymore in the society of growth, even if we always consume and produce more. Latouche goes further by adding that "growth has become humanity's cancer" which reminds one of the American novelist Edward Abbey's (1977) observation that "growth for the sake of growth is the ideology of a cancer cell." Trying to break our addiction to this "human-generated illness" requires us to "decolonize our imaginaries" dominated by growth, in which growth means progress and no growth means going backward. What is needed clearly is a cultural revolution, even though Latouche admits that "it will certainly require another 30 years" to achieve.

According to Latouche, the current economic system is actually a consumer society based on the idea that "there are no limits to our so-called 'needs'" and it is this feature that makes "the system...condemned to grow." He adds that the current economic system, which had been in a "virtuous circle," has ultimately become a "hellish circle." Now, only degrowth can break this spiral.

In the arena of battle over words and ideas, it is important to have a word that cannot be reduced to market logic when dealing with sustainability. Therefore, degrowth, which is like "a UFO in the microcosm of politicking," represents a clear distinction with other lazy ideas such as "sustainable development" that are simply "patching things up so as to avoid having to change them." According to Latouche, it is also important to break the "confusion

between ‘development’ and ‘growth’ that is deliberately sustained by the dominant ideology.”

Latouche then explains that although “capitalism is not the source of all problems and all our powerlessness... a generalized capitalism cannot but destroy the planet in the same way that it is destroying society and anything else that is collective.” However, he adds that a critique of capitalism is not enough since “capitalism, neo-liberal or otherwise, and productivist socialism are both variants on the same project for a growth society.” The very problem is that “growth, seen in terms of the production/jobs/consumption trio, is held responsible for every scourge.” Therefore, a critique of any growth society is needed, and for that reason degrowth is necessary.

Fortunately, this book is not limited to just explaining why a critique of the current socioeconomic system—whether capitalist or socialist—is necessary to achieve sustainability and equity. What the volume actually suggests is another way to see our societies and even ourselves. Although Latouche admits that “de-growth is conceivable only in a de-growth society,” he shows how to exit from the chicken-and-egg dilemma. In other words, the book demonstrates that a degrowth society that is sustainable and self-sufficient is possible.

Indeed, Latouche provides an argument to understand how to “realize the utopia” of the degrowth project. He aims to give policy makers and activists tools for a political program, not necessarily in the electoral sense of the term, but in its strong sense. This “means giving politics new foundations” as the book shows before pointing out the depth of the political crisis. The author stresses the fact that it is necessary to outline “the contours of what a non-growth society might look like” prior to any program for political action. He logically adds that “the preconditions of a degrowth society have yet to be established.”

As a basis of a cultural revolution, Latouche offers “virtuous circles of eight R’s: re-evaluate, reconceptualize, restructure, redistribute, relocalize, reduce, re-use and recycle.” These principles correspond to a series of eight interdependent changes that “can trigger a process of de-growth” and represent “a reaction to the system’s ‘overs,’” in one word, how to *resist*.

What then gives the book its full added value is probably Latouche’s argument to address questions and objections arising in people’s minds when confronted by the idea of degrowth for the first time. This is all the more important since there is still a lot of confusion in the media that “decided for or against [degrowth] without taking the trouble to find out what was at stake.” Although there is insufficient space to enumerate all of the misconceptions that

Latouche addresses in his book, it is possible to provide the example of what the author says about employment: “If we change our lives, we can solve the problem of unemployment, but if we focus on the problem of jobs for the sake of jobs there is a danger that we will never change society and that we will head straight for disaster.” This sentence perfectly illustrates the approach we should have when trying to “decolonize our imaginaries” from the paradigm of growth.

Lastly, I would like to use the opportunity of this review to urge readers to take up Latouche’s remarkable book because it represents a milestone in understanding what is at stake when evocating the “D-word” of degrowth. For that reason, this volume is not only of interest to policy makers and activists, but for the general public as well. I finish with a quote from the Spanish ecological economist Juan Martinez-Alier during the Second International Degrowth Conference in Barcelona in March 2010: “Degrowth will become the major current of economics” (quoted in Kempf, 2010). Believe it or not, this observation demonstrates the growing influence in Western countries of the degrowth movement as a “concrete utopia” for ecological sustainability and social equity.

About the Author

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Philip J. Vergragt

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Farewell to Growth is written to provide conceptual underpinning for the “degrowth” concept, philosophy, and strategy: with exponential growth

and a finite earth, we are heading for disaster. Nothing new here, of course, since Rachel Carson's *Silent Spring* and the Club of Rome's *Limits to Growth*. What is new is that degrowth is suddenly hitting the media, especially in France and Spain.

Latouche contends that degrowth is "a political slogan with theoretical implications...an explosive word...it is designed to make it perfectly clear that we must abandon the goal of exponential growth." It is not negative growth; it could be characterized as "a-growth," in the sense to say farewell to a faith or religion (like atheism). It is definitively not the same as "sustainable development," which Latouche criticizes as a pleonasm and an oxymoron at the same time.

The roots of degrowth go back to Thomas Malthus, and especially to Nicholas Georgescu-Roegen who applied the Second Law of Thermodynamics to economics. Contemporary society, however, is addicted to growth. "Development is sacrificing populations and their concrete, local well-being on the altar of an abstract, deterritorialized well-being." To build a degrowth society, we need eight interdependent changes: re-evaluate (harmony with nature); reconceptualize (new values); restructure (the productive apparatus); redistribute; relocalize (local basis); reduce; and reuse/recycle. These changes point toward a concrete utopia. Latouche especially emphasizes relocalize, meaning reinforcing local communities and local economies. He cites various real-world examples of communities that have embarked on this path, though not all of them—in particular the Bedford Zero Energy Development (BedZED) project near London—are convincing.

The degrowth idea, ironically, was born in the era of post-colonial Africa and stems from critiques of the failed development models of the last 50 years. Degrowth can "prevent them [Southern countries] from being trapped in the blind alley." The solution should be self-sufficiency at the village level. However, a precondition for degrowth in the South is degrowth in the North.

In the third part of the book Latouche proposes "a quasi-electoral political programme." He recommends that we "[g]et back to an ecological footprint equal to or smaller than a planet." To do so will entail using ecological taxes; relocating activities; revitalizing peasant agriculture; reducing working hours for job creation; encouraging the production of relational goods (friendships and neighborliness); cutting energy wastes by a factor of four; and declaring a moratorium on technoscientific innovation. In addition, he proposes a global tax on financial transactions and various other taxes. This is a strange mix of utopian and ecological policies.

With respect to labor and full employment, there is a mix of job creation by introducing elements of a green economy, by reducing the working week, and by revaluing the work ethos itself. As Latouche contends, "[t]he basic question is therefore not the precise number of hours we need to work, but the work's role as a social 'value.'" Degrowth implies both a quantitative reduction in working hours and a qualitative transformation of work. "Unless life is re-enriched, the degrowth project is, too, doomed to failure. We still need to give liberated time a meaning." However, free time is becoming more and more professionalized and industrialized.

As Latouche describes it, degrowth is incompatible with capitalism, although it does not need to get do away entirely with money, markets, profits, and the wage system. Degrowth is not right or left wing and, at least at this point, we do not need a degrowth political party. It is far more important at present to transform ideas and to educate.

The final chapter of the volume poses the question: Is degrowth a humanist mode of thinking? This discussion goes more deeply into the philosophical questions at the root of degrowth. Latouche writes that degrowth "is probably not a humanism, because it is based upon a critique of development, growth, progress, technology, and, ultimately, modernity, and because it implies a break with Western centralism." However, it is not anti-humanist or anti-universalist. The critique of modernity means that we should transcend it, not simply reject it. There is room for eco-anthropocentrism, meaning "that ecological concerns must be a central part of our social, political, cultural, and spiritual preoccupation with human life."

This book provides a powerful ideological basis for degrowth. It certainly offers provocative insights about the philosophical and historical foundations of the degrowth movement. Although the author is reasonably convincing on the level of ideas, he fails completely at the practical and political levels. His analyses may be true globally, but when you try to translate these concepts to your street, your family, your friends, your workplace, or your political party, the flaws become clearly evident. The only place in the book where Latouche is fairly concrete is when he discusses localism. However, no one to date has been able to explain effectively how localized solutions can effectively reverse the powerful forces of globalization.

There are also some less prominent flaws in the book. I do not only mean the "coal-fired nuclear power station" [sic] that appears in the early pages, an observation (or perhaps a translation error?) that illustrates the author's lack of familiarity with anything related to technology. Moreover, Latouche never says anything explicit about two of the major

drivers of growth: the global financial sector and the (at least until recently) veneration of neoclassical economics as a “science.” I find omission of any discussion about global financial markets in this book to be telling. One of the reasons for this situation is that the authors cited in the book are fairly dated and harken back to times before the current era of financial domination (i.e., Andre Gorz, Ivan Illich, Jacques Ellul). A critique of neoclassical economics as it is taught at all major universities around the world should not have been excluded in a book such as *Farewell to Growth*.

I am not personally convinced that “degrowth” is the way to go. Yes, we should be critical of gross domestic product and replace it with an alternative index that more appropriately assesses human and ecological well being. Yes, we should develop small-scale alternatives in sustainable production and consumption, and learn from them. Yes, we should think about how to confront the growth ideology and the

neoliberal market ideology. Yes, we should address dominant power relationships. Yes, we should explore how to frame a social movement that could address these issues. Unfortunately, this book does not lead us in the right direction. Rather, efforts dedicated to working to change lifestyles and values and to motivate systemic changes would more effectively move us down the necessary road. We are still waiting for the appropriate articulation and structuring of such a project.

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BOOK REVIEW PERSPECTIVES

Robert Rattle, *Computing Our Way to Paradise? The Role of Internet and Communication Technologies in Sustainable Consumption and Globalization*

AltaMira Press, 2010, 246pp, ISBN: 0759109486

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In his book, *Computing Our Way to Paradise? The Role of Internet and Communication Technologies in Sustainable Consumption and Globalization*, Robert Rattle examines some of the ecological, economic, and social benefits and consequences of Internet and communication technologies (ICTs). Overall, his analysis of the coevolutionary, interdependent, socially embedded, and transglobal nature of ICTs is cogent and insightful. Surveying an array of arguments, historical perspectives, and research on consumption activities, economic frameworks, globalization, health issues, ICTs, and social processes, Rattle paints a big picture of the intertwined challenges and potential facing the pursuit of sustainable consumption. Rattle's investigation provides opportunities for the reader to engage and grapple with difficult questions about the assumptions, expectations, and values currently driving the trajectory of globalization and the usage of ICTs. Although considering these interwoven issues and questions through Rattle's lens is worthwhile, his book seems to contribute to an ongoing, long-term conversation about future potential and does not facilitate the kinds of urgent actions and policies that the author himself indicates are necessary.

Rattle's central argument is that ICTs have an important role to play in reshaping beliefs and values surrounding consumption, which he argues can in turn shift individual and institutional behaviors creating more sustainability. His frequent references to the beliefs and values that create, foster, and further prevailing social frameworks highlight the underlying normative challenges facing sustainable consumption. He argues that ICTs represent an opportunity to reshape consumption activities and processes in a global, transborder context. It remains unclear, however, how ICTs will, as Rattle asserts, "transform values by restructuring the global world,

our values, belief structures, and human behavior and decision making," given the coevolution and global convergence of the systems and processes he outlines. With so much to cover in his big picture approach, unfortunately, Rattle does not clarify how ICTs might actually facilitate value shifts to create the kinds of behavioral and structural changes for which he argues. The book's call to focus on shifting values, rather than on shifting behaviors, remains a laudable call to action and adds to a holistic view of the sustainable consumption journey.

Another strength of the book is the obvious care that Rattle takes to contextualize his argument. While the language of the book seems to be written for someone with prior knowledge of environmental debates and research, he situates his book in a way that even a nonspecialist can understand. For example, the volume provides an overview of the different mechanisms and processes currently in place. Without requiring the reader to fully agree with him on a definition of sustainability, he introduces the notion as an ongoing journey rather than as a final destination. The book explores the potential of ICTs, the formation of consumption activities, and the trajectory of globalization from many angles. He also considers ICTs and consumption through several cultural and institutional lenses. As a result, Rattle provides a comprehensive overview of the interrelated challenges and opportunities society faces as it seeks to navigate the potential of ICTs to further global connections and sustainable consumption without crossing into cultural genocide. The broad scope of *Computing Our Way to Paradise?* is, however, one of the book's major strengths and undeniable weaknesses.

Unfortunately, the breadth of content Rattle attempts to cover and connect is so massive that his large brush strokes seem to foster more questions than answers. He openly acknowledges the expansive scope of his book as a possible inherent flaw. With so many questions left unanswered, the author is likely to achieve his goal of contributing to the direction of future research and fostering dialogue. It is striking, however, that Rattle makes the case for urgent ac-

tions and policies and then does not provide significant detail about how they should be or can be implemented. He notes, for instance, that “[t]he establishment of appropriate policies and actions are urgently needed to counter these forces.” It is unclear, however, from reading his book exactly how to directly harness the potential of ICTs, as Rattle’s prescriptions are less immediate, protracted, systemic solutions. He provides little detail about how to realistically achieve them or take the first step toward facilitating such transformative changes. The book, for example, proposes shifting to new currency and social structures. Changing systems and values are long-term goals entailing individual, infrastructural, and organizational changes that will require broad-based mobilization and adjustments to deeply seated normative behaviors and decision-making processes. As such, these kinds of transformations and value shifts are unlikely to happen quickly, and Rattle proposes no real plan to help expedite the process.

Part of the prescription the book suggests is creating a new social framework and using energy as the new currency. It is unclear how a new energy economy will move away from the current framework and financial system. He claims that energy and resource capital could replace money, but does not provide a convincing argument why such a change is likely to spark collaboration and not just maintain stratified societal structures based on power that the current economy exploits. If, as Rattle argues, the current financial economy of power directs social activity, it seems that a new energy economy would similarly evolve into a system of power that directs social activity. His vision for “an organic transformation of energy, communications, and society” and a collaborative future presents a hopeful image. Furthermore, while ICTs may have a role to play in creating opportunities for collaboration, Rattle’s policy discussion does not offer steps to spark such a transition.

Another specific that the book does not readily consider is the identity of the intended reader, which proves to be a bit problematic as there seems to be some need for mitigating confusion on this point. Rattle frequently asserts that *we* hold particular beliefs and values, that *we* must take action, and that *we*

need to reshape our current structures of unsustainable consumption in particular ways. It is unclear, however, to whom the author is referring. Because he is considering the role of ICTs and particular processes on a global scale, this lack of clarity creates both limits and opportunities for the claims that he attempts to further. Are *we*, for example, all humans, Americans, democratic global citizens, ICT professionals from industrialized countries, North Americans, or perhaps Western inhabitants? While *we* may be an attempt at inclusivity, this reader does not share some of the beliefs *we*, according to Rattle, apparently do. In this way, the use of *we* limits the author’s argument by creating more moments of exclusion than inclusion.

Although there are some inherent weaknesses, this book’s overarching contribution is its integrated and broad focus. Rattle attempts to tackle, from a macro level, some of the conflicting values, dominant paradigms, and opposing worldviews that have led to current consumption decisions and that may lead to transformative change moving forward. He provides a comprehensive and attainable overview and illustrates the complexity of the many interrelated issues and systems society faces. *Computing Our Way to Paradise?* will likely appeal to those ready to step back and consider the bigger picture that the road to sustainable consumption must navigate.

About the Author

Laura Stanik is a recent graduate of Rutgers University’s Master of Science degree program in Global Affairs with an environmental concentration. Her research focuses on sustainable consumption with special attention to the roles of individual behavior change, innovative uses of online tools, and virtual learning communities in facilitating long-term sustainability. Laura was selected to attend Clinton Global Initiative University 2010 and currently serves as the communications coordinator for the Sustainable Consumption Research and Action Initiative (SCORAI). As Assistant Director of the Professional Development Studies Office at Rutgers University’s School of Communication and Information, Laura manages the department’s online academic offerings and marketing initiatives.



BOOK REVIEW PERSPECTIVES

Eugene A. Rosa, Andreas Diekmann, Thomas Dietz, & Carlo Jaeger (Eds.), *Human Footprints on the Global Environment: Threats to Sustainability*

MIT Press, 2010, 328pp, ISBN: 0262512998

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The topic of global environmental change (GEC) is of urgent importance today. To address planetary scale problems like climate change, biodiversity loss, or overconsumption it is important to understand the causes and consequences of human impacts on GEC. In their edited collection *Human Footprints on the Global Environment: Threats to Sustainability* Eugene Rosa, Andreas Diekmann, Thomas Dietz, & Carlo Jaeger present a comprehensive overview of approaches to explaining and conceptualizing GEC. By presenting research from authors with different academic backgrounds, this collection aims to enhance the discourse on GEC across disciplinary boundaries by “bridging future work in social and ecological sciences.” By focusing on the human impacts of GEC and the coupled impact of human and natural systems (CHANS), this multidisciplinary work manages to discuss such diverse topics as land use, risk societies, international regimes, common property, and vulnerability. The goal of the book is to “bring together core findings on the human dimensions of GEC to illustrate the advances that have been made in this critical area of study” and to understand the complex challenges of CHANS in the context of environmental change.

To address these questions, in the first chapter Rosa & Dietz summarize the current state of the art on GEC by providing definitions and explanations of key terms and aspects in this field. In the following chapter, Ulrich Beck turns to the concept of a “world risk society” by giving a concise analysis of the theoretical connotations of the concept arising from realist and constructivist worldviews. Going beyond this “either/or” debate, Beck suggests conceptualizing the concept of “world risk society” as “a way of bringing two contradictory postures, self-destruction and the capacity for a new beginning, into equilibrium.” By applying the concept of “sub-politics” as the emerg-

ing sphere of actors and discourse in the global community, Beck argues that “ultimately state politics can be reinvented by actively embracing a policy of climate protection in alliance with civic groups.” He concludes that, while global risks can be regarded as a “force in present and future world history that escapes any control,” at the same time new opportunities for action emerge for states, nongovernmental organizations, and other actors in the area of sub-politics.

In Chapter 3, Dietz, Rosa, & York provide a critical overview on theories of environmental change: different approaches, explanations, and paradigms are compared and their normative implications discussed. An assessment of their benefits and limits, for example in terms of methodology, is given. This treatment is innovative in its attempt to find common points of departure in theories from different disciplines that usually do not acknowledge each other (e.g., ecological modernization theory and literature on the environmental Kuznets curve).

Discussing biophysical as well as human dimensions of land use, Emilio Moran describes in Chapter 4 the possibilities of global modeling of present landscapes. Acknowledging that “considerable advances have been made in the past ten years in clarifying the human dimensions of land use/cover change,” he argues that “a great deal remains to be done.” For example, it is necessary to improve the integration of social and biophysical research in the understanding of land-transformation research, as well as to enhance understanding of the historical development of major ecosystems in light of changing population size and distribution. He concludes that in the coming decade, it may be more productive to think of human actions not as “driving forces” but as choices made around increasingly scarce resources. The means by which human actors organize themselves, both to gain access to resources and to ensure resource sustainability, should be a high priority in future research.

Focusing on the debate on effectiveness of environmental regimes to address global environmental challenges, Oran Young argues in Chapter 5 that the

varying effectiveness of regimes can be explained by specific “sources of effectiveness,” that relate to the problem structure, regime attributes, social practices, institutional interplay, and “broader setting” in which regimes develop (i.e., the economic situation and the character of the ecosystem addressed by the regime). Young makes several suggestions for new approaches to understand effectiveness: to “break new ground” he suggests, for example, to relax the implicit assumptions of unitary and rational actors in research on environmental regimes, to consider sociological approaches to explain individual behavior, and to include in future research non-state actors that can play crucial roles in regime formation.

In Chapter 6, Bonnie McCay & Svein Jentoft address the challenge of solving problems of common property or common pool resources, highlighting the limits of early approaches to understand the “tragedy of the commons” (Hardin, 1968). The authors argue for a “thicker” approach to conceptualizing common property situations, going beyond the “state” or “privatization” solutions for common property or pool resources. Pointing to later research findings (e.g., Ostrom, 1990) that paint a more positive picture of the ability of individuals to regulate common pool resources independent from state and privatization, they emphasize the need to incorporate in future research the cultural and situational contexts in which people interact. This appeal goes beyond an overly pessimistic or optimistic view about the ability of individuals to solve collective action problems.

In Chapter 7, Jeanne Kaspersen and her collaborators discuss the concept of “vulnerability” in the context of coupled human-ecological systems to global environmental change. This concept is partly related to the discourse on “risk societies” as discussed by Beck, but has a somewhat different focus, as it developed from theories and explanations for hunger, poverty, and deprivation. This idea of people’s “vulnerability” has been transferred to ecological systems’ vulnerability. The authors provide an overview of literature and research in this field.

In Chapter 8, Rosa & Dietz summarize the book’s findings and suggest that future research and policy formation should focus on prevention and mitigation, not just on adaptive response strategies for GEC, and that a future GEC research priority should be a “reinvigorated effort to integrate social science

research with research in the biological and physical sciences.”

Human Footprints on the Global Environment opens interesting perspectives on the state of the art of ecology and the social sciences on GEC and extends the debate to new ground. However, its strengths might also imply some of its weaknesses; by aiming to provide an overview of the field, the treatment is sometimes too complex and ambitious. By covering too many different aspects, several of the chapters—notably 1 and 3—resemble encyclopedias. Furthermore, despite giving a comprehensive overview on theories to explain GEC, the book does not focus explicitly on the sustainable consumption discourse. Even though overconsumption is recognized as having a major impact on the environment (see page 115: “consumption patterns...key driver”), this issue is addressed only implicitly by briefly discussing the growth/degrowth debate and the importance of structure for individual decision making (Chapter 3). Despite these minor shortcomings, the book is a valuable contribution to the current GEC literature.

About the Author

Jessica Pape is a postdoctoral research fellow and project coordinator of the ConsEnSus (Consumption Environment and Sustainability) Project, a four-year collaborative research project involving Trinity College Dublin and National University of Ireland, Galway. This interdisciplinary initiative examines four key areas of household consumption that currently harm the environment and inhibit our ability—both in Northern Ireland and the Republic of Ireland—to achieve sustainable development: transportation, energy, water, and food. More information about the project is available at <http://www.consensus.ie>. She has a background in political science and completed her PhD at the University of Konstanz in Germany in comparative environmental politics.

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BOOK REVIEW PERSPECTIVES

Matthew Bentley, *Planning for Change: Guidelines for National Programmes on Sustainable Consumption and Production*

UNEP, 2008, 108 pp, ISBN: 9789228996

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Planning for Change was published under the auspices of the United Nations Environment Program (UNEP) with the aim of giving “advice to governments and other stakeholders” on how to set up successful national programs on sustainable consumption and production (SCP). To summarize my overall impression: the publication provides valuable guidance for governments. And it does so as well for other stakeholders, as soon as a particular government starts such a “sustainable consumption and production process.”

Starting with typical alarming figures about the “significant and mounting” environmental, social, and economic costs of currently unsustainable systems of consumption and production, the guidelines build a floor on why the world needs SCP in every country. They point out that fundamental changes in the way societies produce and consume are indispensable for achieving global sustainable development. As a consequence, the guidelines argue that it is prudent to develop a program, a framework, or an action plan on SCP or, wherever possible, to include SCP as a priority issue in national policies such as sustainable development strategies, development plans, and poverty-reduction initiatives. The guidelines provide advice to governments and other stakeholders on how to plan, develop, implement, and monitor such a national SCP program whether the country starts from the very beginning or already has an existing plan that it would like to improve.

Planning for Change successfully balances general information about how to formulate best practice programs with lessons from actual country experiences. The report does not promote a one-size-fits-all model to implement a national SCP program. It instead recognizes and adequately considers that circumstances and specific needs vary too much across countries. Even more, within a single country establishing a meaningful scheme requires careful moni-

toring of feedback loops.

Overall, the report argues for a strategic programmatic approach to help balance necessary interventions for the consumption and production of goods and services. Policy design should connect long-term vision to medium-term targets and short-term actions. Further on, a multistakeholder approach is an important prerequisite for implementing an SCP program flexible enough to withstand a process of continuous improvement.

Key issues for consideration include obtaining high-level national commitment and leadership; initiating a multistakeholder process; defining objectives, actions, targets, and indicators; basing the program on comprehensive and reliable analysis; building from existing national policies (e.g., integrated product policies and cleaner production policies); integrating with existing national strategies; and developing sector- or issue-based action plans (e.g., resource efficiency or sustainable government procurement).

Consequently, the backbone of the guidelines is a practical sequential approach consisting of the following ten steps: establish an advisory group; conduct a scoping exercise; set the institutional framework; select the priority areas; define objectives and set targets; select policies and initiatives; obtain official approval of the program; implement the program; document, monitor, and evaluate; sustain and improve. Each step is briefly explained and illustrated with country-specific examples. The cross references between these steps indicate that they do not have to be followed in this strict order, but each should be taken into account.

Specific attention (in the form of a chapter of its own) is given to indicators for SCP. In line with the general approach, the guidelines recommend no strict set of indicators, but present for illustration a rich array of alternatives from national examples and intergovernmental organizations. Relevant hints are given for how a country should choose or develop a set of indicators to fit its national needs. Several detailed national case studies and helpful links to references for further insights and inspiration toward national SCP programs complete the guidelines.

The report makes a number of important points. For example, it argues forcefully that implementation of an SCP program is crucial for change and that the best document ultimately is of little value if there is no follow up. This point on continuity is critical, even if suggestions are missing on how to overcome implementation gaps. Key also are the insights from both academic literature and political circles on identification of the most useful SCP policies. For example, research asserts convincingly that voluntary initiatives are often less effective than mandated requirements. Social and technological innovation is crucial, as is the need for economic incentives.

The guidelines furthermore point toward the greatest weaknesses of current SCP programs, a lack of defined targets with clear budgetary priorities. The report recommends that targets be linked to a vision, a set of objectives and, where appropriate, a framework that supports the national budget (e.g., making necessary resources available for SCP actions). Remarkable in the document is its unambiguous statements about the limits of educational and informational approaches toward SCP compared to the potential of administrative and economic instruments.

In contrast, other sections of the report lack proper reflection on insights afforded by the academic literature on sustainable consumption. The guidelines highlight the potential of win-win strategies that are relatively easy to communicate and implement. However important such initiatives are—mainly for the short-term success of a program—focusing undue attention on these aspects substantially undermines the urgent and radical changes needed in consumption and production patterns.

As the guidelines are, developers of a national SCP program can see marginal policies—those with

an actual but insignificant impact—as well as meaningful policies as justified. The fact that UNEP is preoccupied in its SCP material with emphasizing the availability of “low hanging fruit” should not be a surprise because this approach is a common feature of the SCP documentation produced by international government organizations. Future versions of the guidelines should nonetheless distinguish politically “realistic” targets from socially and economically necessary ones.

Independent of the call for multistakeholder processes and agreements, the guidelines leave no doubt that government holds prime responsibility for the development of SCP programs and the implementation of the requisite sustainability infrastructure. *Planning for Change* especially warns about the fallacy of expecting the heroic minority of “green consumers” to solve environmental problems. However, given this situation, it would have been useful if the report provided some guidance on how civil society organizations might inspire political decision makers and/or initiate bottom-up processes toward national SCP programs.

About the Author

Sylvia Lorek is a researcher and policy consultant working on sustainable consumption. She has studied household economics and nutrition (*Oecotrophologie*) with a focus on environmental and consumer consulting, as well as economics. A lecturer at the Münster University of Applied Sciences, she heads the Sustainable Europe Research Institute (SERI), Germany, and is an active member of the Northern Alliance for Sustainability (ANPED).