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Sustainable Community Development and Ecological Economics: Theoretical Convergence and Practical Implications

MEREDITH P. HAMSTEAD & MICHAEL S. QUINN*

ABSTRACT This paper examines the relationships between community development, sustainable development and economics. In particular the convergence of thought in the realms of strong sustainability and ecological economics are shown to be consistent with the goals of sustainable community development (SCD). It is argued that in order to truly and effectively practice SCD, an economics of sustainability, best represented by ecological economics, should be incorporated into all facets of SCD work. It is suggested that the application of neoclassical or environmental economics is likely to limit the effectiveness of SCD work. Five practical implications of the necessary relationship between SCD and ecological economics are presented, suggesting that SCD practitioners must: (1) seek interdisciplinarity, (2) understand and endorse limits to growth, (3) adopt and endorse alternative measures of success, (4) seek the economic valuation of natural and social capital and (5) ensure the inclusion of equity in discussions of sustainability. Finally, a practical example of those implications is offered by way of a community economic workbook application.

Introduction

The purpose of this paper is to present an emerging convergence of thought between strong sustainability, sustainable community development (SCD)

*Correspondence Address: Michael S. Quinn, Faculty of Environmental Design, University of Calgary, 2500 University Drive NW, Calgary, Alberta, Canada T2N 1N4. Tel: +1 403 220 7013. Fax: +1 403 284 4399. Email: quinn@ucalgary.ca

and ecological economics. We suggest that in order to implement genuinely sustainable community development, SCD practitioners should integrate the principles of ecological economics and strong sustainability into their theory and practice.

The paper begins with a brief description of the community context that gave rise to the research. Next we present a discussion of the interdisciplinary convergence of sustainable development, SCD and ecological economics. To do so, we identify and link the central tenets of each. We recognize that our treatment here is somewhat parsimonious, but our aim is to clearly position the particular areas of convergence that form the foundation of our argument. We then address the practical implications of such theoretical convergence for SCD practitioners. The community context described above is then utilized as an abbreviated case study to examine how the theoretical convergence could allow an emerging community development tool to be more effectively applied in support of sustainable community development (SCD).

Background

In January 2000, 300 citizens from six small rural communities in south-eastern British Columbia, Canada gathered to discuss the future of their rapidly growing and changing communities. The two-day Successful Communities Forum explored questions around the theme 'Balancing Nature and Commerce'. The Successful Communities Forum marked the beginning of a multi-year SCD process in which residents first articulated their individual vision for the future, and then began to develop means of achieving the shared elements of their visions (see www.pytela.bc.ca/scf).

Having clearly articulated a shared vision of sustainability, residents began to seek reliable sources of economic and ecological information that could guide more effective decision making. At the same time, the Sonoran Institute, a non-profit community stewardship group (see www.sonoran.org), was developing a workbook for Canadian community-based economic education entitled *Measuring Change in Rural Communities* (Korber et al., 2001). *Measuring Change* was designed specifically to assist communities in the collection and analysis of reliable comparative data about a local economy in order to better understand and prepare for problems and opportunities arising from rapid growth and economic change.

The concurrence of the Successful Communities Forum and development of *Measuring Change* presented an opportunity to couple an existing, on-the-ground SCD process with theoretical research about the relationship between sustainable community development and divergent economic models, namely, neoclassical, environmental and ecological economics (Hamstead, 2001). We applied *Measuring Change* off the shelf in Invermere, British Columbia, the largest of the six communities, with a group of residents who were participants in the Successful Communities Forum. The results of this application allowed us to evaluate *Measuring Change* as a practical tool for economic education toward sustainable community development (Hamstead, 2001).

What Is Sustainable Development?

Three Central Tenets

Literature on sustainable development (SD) has proliferated since the publication of the 'Brundtland Report' in 1987 (World Commission on Environment and Development [WCED], 1987). A review of this literature (Hamstead, 2001) suggests that a working definition of SD must include the following three central tenets:

- All decisions must take into account the effect on intergenerational equity, which means meeting the needs of the present generation without compromising the ability of future generations to meet their own needs (Borghesi & Vercelli, 2003; WCED, 1987).
- Development decisions that are sustainable are ecologically viable, socially desirable and economically feasible (Andriantiansaholiniaina et al., 2004; Bridger & Luloff, 1999; Campbell et al., 1997; Macintosh, 1998; Rees, 1989; Roseland, 2000).
- We are living in a closed system (the earth) in which continued quantitative economic growth should be considered the antithesis of success (Boulding, 1973; Daly, 1973; Daly et al., 1989; Georgescu-Roegen, 1971; Hawken, 1994; Hawken et al., 1999; Maser, 1997; Nozick, 1993; Power, 1996; Soule & Terborgh, 1999).

The first tenet, intergenerational equity, was firmly established in the widely cited Brundtland Commission definition that stated, 'sustainable development is meeting the needs of the present without compromising the ability of future generations to meet their own needs' (WCED, 1987). This notion remains central to contemporary discussions of sustainability (Stavins et al., 2003).

The second tenet is a call for interdisciplinary praxis that requires decision makers to accord questions of social justice, democracy, biodiversity, economic stability, and distribution equal priority in all decisions. This is not to suggest that SCD practitioners should simply stir together existing models of economics, ecology or community development, but rather that those individual models must each become rooted in the principles and foundations of the others. There is a growing recognition that the most significant environmental problems we face today are characterized by the dynamics and interactions between social and biogeophysical systems (Berkes & Folkes, 1998; Dickens, 2003; Kinzig, 2001; Love, 1999). As Wear (1999, p. 299) clearly articulates,

The separate efforts of social and natural sciences are unlikely to fully illuminate the fabric of or fashion solutions to environmental problems. Rather, much might be gained by truly interdisciplinary research—endeavors where each constituent discipline informs the investigation of the others and where hypotheses might even be jointly formed. Interdisciplinary research seems the best hope for unraveling the complex

interactions between the collective behavior of *Homo sapiens* and their environment and yielding workable solutions to these problems.

The development of effective interdisciplinary methodologies may be one of the most significant and imperative intellectual challenges of the 21st century and will entail advancement in the area of ‘post-normal science’ (Funtowicz & Ravetz, 1999; Muller 2003).

The final and perhaps most controversial tenet prevalent in sustainable development literature relates to limits to growth in a finite system. This tenet is best illustrated through Boulding’s (1973) differentiation of the ‘cowboy economy’ from the ‘spaceman economy’, or the concepts of ‘empty world’ and ‘full world’ economies (Daly, 2003; Costanza, 1999; Farina et al., 2003). The cowboy economist, living in an ‘empty’ frontier world, accepts as true that the success of an economy ought to be measured by its size—bigger is always better. This mentality is reflected today in the persistent reliance on gross domestic product (GDP) as the internationally recognized measure of national success. The GDP accurately measures the total flow or volume of goods and services produced by a nation’s economy (Scruton, 1983). It is not, however, a reliable indicator of ‘national well-being’. The problem is that GDP is a measure only of the size of the economy, and has no predetermined optimum level. Thus, it is popularly assumed that more is always better—failing to account for ecological limits to the total size of the human economy imposed by the planet.

Conversely, recognizing that he lives in a finite, ‘full world’ system, the spaceman economist values most highly the minimization or sufficiency of material production and consumption. Here the essential measure of success is not growth, but rather the quality and complexity of human, manufactured, natural, financial, and social capital stocks (Hawken et al., 1999; Ekins et al., 2003). The spaceman is first and foremost concerned with the maintenance and enhancement of the natural capital stock that is the system upon which we rely.

Degrees of Adherence to Sustainable Development

While most definitions of sustainable development reflect all three of the above tenets, the degree to which they do so varies. Emphasis is placed differently depending upon the context in which sustainable development is applied, and upon the theoretical tendencies of individual practitioners. Thus, it is essential to situate this paper along a spectrum of adherence to sustainable development.

Herman Daly refers to a scale of ‘weak to strong sustainability’ (Daly & Cobb, 1989), while Bridger and Luloff (1999) contrast the ‘constrained growth’ and ‘resource maintenance’ models. There are two primary distinctions in the degrees of sustainability, and they have to do with the applied definitions of ‘development’ and the assumed level of substitutability between types of capital.

Weak Sustainability

Recognizing that unlimited economic expansion is neither desirable nor possible, the weak sustainability model defines ‘development’ as approximately synonymous with constrained economic growth and further maintains that growth ought to be the primary goal of economic activity—that, in fact, sustainability depends on it. This model assumes the perfect substitutability of, and disregards differentiations between, types of capital. It is argued that non-renewable resources can and will be substituted for by other forms of energy and materials production, such as that derived from recycling. This approach would allow some environmental degradation to continue so long as the overall balance of natural and manufactured capital is maintained through economic and social gains (Baker et al., 1997). It is further characterized by the suggestion that we can solve the issues of sustainable development by rationalizing current processes and incorporating new technological and scientific advances while leaving basic practices, institutions and attitudes largely untouched (Davidson, 2000; 2002).

Strong Sustainability

Alternatively, the strong sustainability model emphasizes the retention, improvement and maintenance of existing and future capital, as opposed to constrained economic expansion. This model derives from the perception that the potential substitutability of manufactured capital for natural capital is significantly limited by such environmental characteristics as irreversibility and uncertainty, and by the existence of critical components of natural capital which make a unique contribution to welfare (Bridger & Luloff, 1999; Ekins et al, 2003). ‘Development’ in this case is defined as the qualitative improvement of all types of capital, as opposed to the quantitative expansion of one type of capital.

The strong sustainability model argues for greater resource protection, particularly of key types of natural capital, even if this means forgoing some development opportunities (Baker et al., 1997). This approach embraces the notion that contemporary ecological and social crises mandate fundamental changes in the way we interact with ecosystems, and is not comfortable with the incremental approach advocated by weak sustainability models (Davidson, 2002).

What Is Sustainable Community Development?

As the nomenclature suggests, sustainable community development is a melding of the fields of community development and sustainable development. Community development projects can generally be classified in one of two categories: liberal or progressive (Fontan, 1993). While this is a highly simplified categorization, it is supported by other development practitioners who argue that, however simplistic, it is useful in that it allows

for differentiation between often radically different visions that go by the same name of ‘community development’ (MacIntyre, 1998).

Liberal Community Development

Liberal community development initiatives are also referred to as ‘community economic development’. These initiatives are characterized by the goal of maintaining or repairing the economic fabric of a community in order to create jobs and precipitate a trickle-down effect. The assumption is that poor community health can be attributed to a malfunction in the process of economic growth, which can be righted through correct stimulation, in particular, the promotion of local private entrepreneurship and measures to increase the employability of the population. Development in this case is focused on the quantitative expansion of the local economy (Blakely & Milano, 2001; Fontan, 1993).

Progressive Community Development

Progressive community development initiatives appear at first glance to be very similar to liberal initiatives, but their underlying assumptions are divergent. Progressive community development projects are part of a wider social movement that questions the values and social systems that dominate Western societies. The assumption is that mainstream economics has in many ways failed and will continue to fail to meet the needs of small communities and that alternative structures and systems must be sought. Progressive community development initiatives focus on repairing the social fabric, as opposed to the economic fabric, of a community. Development, in this case, has as much to do with improving the quality of a community’s human capital as it does with the increasing size of the local economy (Fontan, 1993).

Sustainable Community Development

Upon reviewing the literature, it is apparent that SCD cannot adequately be subsumed under either the progressive or liberal community development traditions. Instead, it is best understood as a third form of community development that draws from both of its predecessors, and integrates a third component of ecological sustainability. It focuses neither on economy nor on community as the primary locus of action, but seeks the integration of ecologic, economic and political tools, models and strategies.

Based on a review of SCD literature (Hoff, 1998; Maser, 1997; Nozick, 1993; Roseland, 1998; Shuman, 1998; Weinberg et al., 2000) the following features are central to the theory and practice of SCD:

- *economic diversification* and self-reliance;
- *social justice* through citizen empowerment and improved access to information, education and meaningful and effective participation;

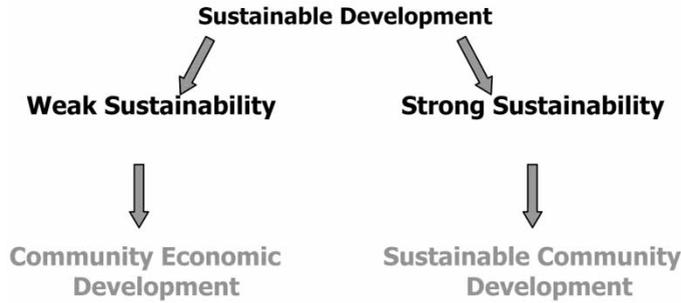


Figure 1. Community economic development and sustainable community development on the spectrum of adherence to sustainable development.

- *ecological sustainability* through community-based stewardship and the minimization of all forms of consumption and waste;
- *integration* of economic, social and ecological strategies for, and models of, well-being and change.

These defining characteristics of sustainable community development are interdependent, no one taking priority over the others. They stem from, and are in addition to, the three central tenets of sustainable development. Together they form a normative framework for the practical application of SCD.

The practical implications of exploring approaches and definitions of sustainable development as they relate to community development are related to differences in application. Weak sustainable development promotes the application of community economic development models, while strong sustainable development necessitates the application of sustainable community development models (Figure 1).

Ecological Economics: Towards an Economics of Sustainability

Having ascertained that sustainable development, and thus sustainable community development, requires the integration of ecological, economic and social objectives, why is it that the subjects of economics and sustainable development often seem so incongruous? Much of this incongruity can be attributed to the current mainstream understanding and definition of economics.

The contemporary economic model, neoclassical economics, is primarily concerned with the optimal or efficient allocation of scarce resources among competing uses (Field & Olewiler, 1995). 'Allocation refers to the relative division of the resources flow among alternative product uses—how much goes to cars, to shoes . . . and so on. The policy instrument that brings about an efficient allocation is relative *prices* determined by supply and demand in competitive markets' (Costanza et al., 1997). Due to the influence of the neoclassical school, economics has come to be synonymous with

efficient allocation, and thus with commercial activity, to the exclusion of most other aspects of economic study. Contemporary economics is almost exclusively associated with income, largely addressing the volume of commercial activity, and equating the quantitative growth of that flow (GDP) with success.

Whereas neoclassical economics is primarily concerned with matters of allocation, sustainable development, by definition, requires further consideration of an appropriate economic scale [1] and distribution [2] in order to successfully integrate traditional economic objectives with social and ecological objectives.

Environmental economics represents an attempt to address the apparent inadequacies of the neoclassical model by broadening the scope of commercial calculations to include formerly external considerations such as ecological or health degradation (full-cost accounting). Nevertheless, like Boulding's cowboy economy, both the neoclassical and environmental economic models take into account, first, appropriate allocation and, second, questions of appropriate distribution, in the form of welfare economics (Gilpin, 2000) and full-cost calculations (which include social and environmental factors). However, the question of an appropriate scale of the economy is not addressed directly in environmental economics.

In contrast, the ecological economist suggests that the environmental economics approach is not sufficient to meet the definitional and practical demands of sustainable development. Instead, like Boulding's spaceman economist, ecological economics seeks interdisciplinarity, in which existing economic models are *rebuilt* upon a three-part foundation of the social, economic and physical sciences. While it is agreed that allocation, in the form of full-cost accounting, must be one part of economic decision making, ecological economics is concerned primarily with the appropriate scale, or total volume, of economic activity, secondarily with inter- and intra-generational distribution, and thirdly with allocation (Costanza et al., 1997; Daly, 2003). Finally, appropriate allocation for the ecological economist does not consider first which resources we should take and for what use, but which can and must remain in use by the ecosystem, regardless of potential human consumption (Quinn, 2002). This order of priority is reflected in the three primary tenets of sustainable development (Table 1).

Regarding the question of substitutability, the ecological economist is clear: while there are instances in which substitution is possible and even desirable, there are critical cases in which it is neither. These cases render the

Table 1. Order of economic priority (Costanza et al., 1997)

Neoclassical/environmental economics	Ecological economics
1. Allocation	1. Scale
2. Distribution (intra-generational)	2. Distribution (inter- and intra-generational)
	3. Allocation

growth imperative of neoclassical and environmental economics inappropriate. They include factors or elements upon which we are dependent for many of our commercial inputs and most if not all of our waste sinks, and which are critical for the mere survival of all living things. They are clean air, clean water, fertile soil, the ozone layer, biodiversity and a healthy workforce, to name some of the most obvious examples. While there may well be substitutes for isolated natural resources, there is no substitute for the complex ecosystems and societies that support and enhance life.

In summary, ecological economics has four centrally defining characteristics:

- *challenges the growth paradigm* of neoclassical and environmental economics;
- *integrates economic, social and ecological objectives* in all models and decision-making processes;
- *is concerned primarily with scale*, secondarily with distribution and thirdly with allocation; and
- considers the balance of *human and non-human access* to scarce resources.

It should be apparent at this point that while ecological economics and sustainable community development are plainly compatible, environmental and neoclassical economics fit more closely with liberal or community economic development (Figure 2).

Two important practical issues arise out of the theory of ecological economics. The first is that the question of scale is not one that can be readily addressed using market mechanisms. Instead, scale is a political and moral question that can only be addressed by educated, interested and aware populations and governments. The market cannot solve this problem independently. Further, the issue of scale, or consumption, is linked inextricably to



Figure 2. Environmental and ecological economics on the spectrum of adherence to sustainable development.

the issue of distribution (Stavins et al., 2003). If only an educated, interested and aware population can make the necessary decisions about scale, then it is critical that education, nourishment, opportunity for effective participation, and comfort are more equitably distributed among people and among generations. This too is a moral and political issue. Mainstream economics is at least partially equipped to deal with matters of national and intra-generational distribution via welfare systems and transfer payments. However, none of our existing systems of economics or governance is presently equipped to address questions of appropriate scale or sufficiency of consumption, or of appropriate international and intergenerational distribution. This is where the practical work of the SCD practitioner can play an important role.

The second issue is, if not quantitative economic growth, then what? While this question is somewhat outside the scope of this paper, we address it briefly here. Cobb et al. (2001), Costanza et al. (1997), Daly and Cobb (1989), Hawken (1994), Hawken et al. (1999), Power (1996) and Roseland (1998), among others, have suggested that if we are to shift away from quantitative economic expansion as the primary measure of success, we must also incorporate measures or indices that quantify traditionally qualitative aspects (e.g. quality of life or well-being, longevity, stability and diversity) of our communities and products. Qualitative improvement of capital is the driving goal of sustainable community development. Communities that go through the process of detailing what it is that they want to look like in the future tend to find out that most of their wishes are qualitative, and cannot be attained by quantitative economic change alone (Gailus, 2000). Ultimately, the goal of economic improvement is not increased quantity per se, but rather improved quality, resilience or coherence (Daly et al., 1989; Power, 1996).

Thus, we arrive at the normative conclusion that if one seeks to promote the theory and practice of sustainable community development, one's work must also communicate, and be firmly grounded in, the theory and practice of ecological economics.

Integrating SCD and Ecological Economics: Practical Implications

If we accept, then, that SCD and ecological economics are fundamentally compatible, a question arises regarding the practical implications of this pairing for SCD practitioners, including policymakers, NGOs and individuals.

SCD Practitioners Must Seek Interdisciplinary Integration

Perhaps most importantly, the SCD practitioner must become well versed in economics, specifically, ecological economics, in order that they are better able to foster discussion rooted in more locally meaningful definitions of community success. Ecological, economic and social well-being are inextricably linked. Focusing on any one over the others increases the likelihood of weak or even regressive outcomes. Thus, just as economists must come to

understand the theory and practice of ecology, conservation, and community development, SCD practitioners must develop a functional understanding of the models, goals and justifications of at least two, and preferably three, models of economics (neoclassical, environmental and ecological economics) (Czech, 2002). By combining interdisciplinary thinking with a collaborative, community-based approach to sustainable development, the SCD practitioner will be better able to support a community in the development of unique, effective and locally meaningful solutions to the causes of unsustainability.

SCD Practitioners Must Understand and Endorse Limits to Growth

Given that sustainable development, SCD and ecological economics all focus to some degree on the notion of limits to growth, it is essential that SCD practitioners consistently and effectively communicate this concept in their work. This may be the most difficult implication of pairing SCD and ecological economics. Challenging the growth paradigm of the modern economy requires that SCD practitioners recognize that over-consumption (at all levels from individual to national) is at the root of most Western sustainable development issues (Boyd, 2003; United Nations Development Programme [UNDP], 2003), including biodiversity loss, diminished air and water quality, threats to water supply, and global inequity, among others. The fundamental message behind SCD must be that choices about what and how much we consume have direct implications for social and ecological well-being; that, in fact, more is not necessarily better. Sustainable community development practitioners must persistently foster discussion with the public, governments and industry about the need to seek sufficiency as opposed to simple efficiency of consumption.

SCD Practitioners Must Adopt and Endorse Alternative Measures of Success

Reliance on GDP as the primary measure of national well-being is perhaps the single most significant indicator of the persistence of the growth paradigm in modern economics. If SCD practitioners are to effectively communicate the need for limits to growth, a growing local economy must never be solely applied as an indicator of increasing community well-being. Instead, alternative and more comprehensive models such as the Genuine Progress Indicator (GPI) (Aneilski et al., 2000; Redefining Progress, 2001), the Index of Sustainable Economic Welfare (Daly et al., 1989; England, 1998) or even tools like Sierra Business Council's Wealth Index (Sierra Business Council, 1999) must be applied *in conjunction* with GDP. We are not, however, suggesting that the GDP should be altogether discarded. Inclusion of GDP, as the leading indicator of economic scale, in a complex suite of indicators is critical to accurate assessment of the sustainability of an economy relative to natural capital. The SCD practitioner must help communities to ask questions about both the costs and benefits of growth, in ecological and social

terms. And then they must help those communities to redefine or re-vision success in terms of measures that more are locally meaningful and genuinely positive. It is essential to the ecological and social well-being of our communities that these factors become an integral component of every day decision making processes.

SCD Practitioners Must Seek the Economic Valuation of Natural and Social Capital

The SCD practitioner must also be able to effectively communicate the idea that while activities such as restoration, conservation, and community development are not usually considered economic drivers, they may in fact be critical elements in the strength of a local economy. These largely non-consumptive activities generate employment, support local businesses and industry, increase education levels and reduce poverty, thus improving the total well-being of the community while protecting its natural capital stocks. This notion is central to the ecological economic framework—healthy ecosystems are not just nice features of successful communities—they are in fact central to the long-term financial well-being of communities (Aneilski et al., 2001; Roseland, 1998).

There is one critical caveat here. The contributions of restoration, conservation and community development to a local economy must not be considered primarily in terms of an overall contribution to economic growth. This error is made when, for example, the justification for designation of new protected areas is made in terms of the potential for associated growth in the tourism sector (see for example, Power, 1991). Instead, a more sophisticated argument around the stabilization or regeneration of natural and social capital resources must be forwarded. Of course, making this argument persuasively is contingent on clear understanding and communication of alternative economic models and means of measuring success, as noted above.

SCD Practitioners Must Ensure the Inclusion of Equity in Discussions of Sustainability

Last, but by no means least, SCD practitioners must reconnect sustainability to those elements of traditional community development models that focus on inter- and intra-generational equity. When sustainable development was first popularized in international development literature, the focus was largely placed on social equity. Since then, however, in the Western world, the battle to see the inclusion of ecological considerations in the definition of sustainable development has resulted in the virtual exclusion of social equity from SD debate. While it is now clear that financial wealth is neither a necessary nor a causal factor for sustainability, it is abundantly clear that poverty is often a causal or contributing factor of *unsustainability*

(Czech, 2001; Dinda et al., 2000; Unruh et al., 1998). Thus, by reintegrating questions of equity into discussions of ecological integrity and sustainability, SCD practitioners will be able to more effectively forward a vision of sustainable development that addresses root causal factors, as opposed to only the symptoms, of unsustainability.

A Practical Example: Measuring Change in Rural Communities

The convergence of distinct fields of thought outlined above is significant only if that convergence has tangible impacts for the application of those fields. We present here a practical example illustrating means by which this 'convergence model' allows an emerging community development tool (*Measuring Change in Rural Communities*) to be effectively applied in support of sustainable community development.

In 2001, the Sonoran Institute published a Canadian workbook for community-based economic education entitled *Measuring Change in Rural Communities* (Korber et al., 2001). The workbook is intended to assist residents and decision makers to collect and analyze comparative data about their local economy in order to better understand and prepare for problems and opportunities arising from rapid growth and economic change. *Measuring Change* was not specifically designed as a tool for the implementation of SCD theory. However, if applied with the principles of ecological economics held firmly in mind, it may be a powerful community-based economic education tool that tends clearly in the direction of strong sustainability and SCD models. Conversely, if applied in the absence of ecological economic theory, the tool tends clearly in the direction of weak sustainability and community economic development models.

It is the stated task of *Measuring Change* to promote the practice of community stewardship by helping a community to gather good economic information as a foundation for decision making and to build local leadership and local capacity to implement a community's goals (Korber et al., 2001). To these ends, *Measuring Change* teaches a community to gather a variety of publicly available data in the spheres of population, housing, labour force, income, and educational attainment. These are standard subjects of economic enquiry, consistent with a neoclassical understanding of economic analysis. *Measuring Change* then guides the community through a geographically and temporally comparative analysis of those data. Users are encouraged to ask questions about the comparative results which are intended to enhance their understanding of the make-up and characteristics of the local economy and how it has changed over time.

In and of itself, the workbook is highly successful in allowing a community to develop a clearer understanding of their local economy and some overall trends in its composition. Further, when applied in a collaborative context, the workbook can play an important role in fostering the citizen empowerment and improved access to information and education necessary to build sustainable communities.

However, applied in the absence of principles and indicators of ecological economics and strong sustainability, the workbook does little to challenge the growth paradigm, nor does it promote the integration of ecological, economic and social objectives in decision-making processes. Referring again to Figure 2, it can be seen that without the application of ecological economic principles *Measuring Change* must inevitably tend toward community economic development and weak sustainability models. Finally, in terms of the question of equity, the workbook has latent potential to highlight elements of intra-generational equity (via further exploration of data concerning local and regional poverty levels), but fails to directly explore questions of intergenerational equity by excluding indicators of ecological and community well-being.

Again, *Measuring Change* was not designed with the SCD model in mind. However, with some effort on the part of the SCD practitioner to remain cognizant of and incorporate the principles of ecological economics, this tool can be rendered an important part of an economic education process toward genuinely sustainable community development. By incorporating indicators of ecological and community well-being into the practical application of *Measuring Change*, an SCD practitioner would build a more complete picture of the health of a community in the context of strong sustainability. These indicators could include, among hundreds of other possibilities, acres of remaining wetland, relative poverty levels, human health indicators or local biodiversity measures. In fact, the very process of determining precisely which indicators should be added to the existing *Measuring Change* list could be an important part of building community ownership and buy-in to the final assessment of the data gathered.

An excellent ecological data-gathering tool, *Landscapes, Wildlife, and People (LWP)* (Stark et al., 2001), was developed in 2001 by the Sonoran Institute. *Landscapes, Wildlife, and People* can serve as an effective 'sister' tool to *Measuring Change* in the context of sustainable community development. *Landscapes, Wildlife, and People* is a powerful workbook for ecological education and analysis which is similar in some ways to *Measuring Change*. It leads a community through a process of analyzing local and regional ecosystems and the changes they have undergone over time. By pairing the ecological education provided by *LWP* with the standard economic education provided by *Measuring Change*, a community could begin to develop a clearer understanding of the changing relationships between their local economy and the overall quality of their local environment and community. That understanding would be more firmly grounded in the principles of sustainable community development. By clearly establishing these connections, a community may be more effectively prepared to entertain complex and controversial discussions about ecological and social limits to economic growth.

By encouraging communities to explore difficult questions about how economic change corresponds to ecological and social change in the same geographies and time periods, this workbook can be used to foster a more complex and locally relevant discussion about community well-being.

It can be understood that economic change, especially rapid economic growth, necessarily implies ecological and social change as well. This basic understanding is essential if, as practitioners of SCD, we are to begin challenging public discussions around questions of economic sufficiency or scale. Finally, in terms of the question of equity, simply by including a variety of additional data sets about poverty levels in the existing data sets in *Measuring Change*, the SCD practitioner can quickly and simply foster a discussion about intra-generational equity. The incorporation of ecological data through a tool such as *LWP* would begin to raise the question of intergenerational endowments and equity.

In and of itself, *Measuring Change* is a powerful tool for community building and education. Communities that have applied this tool as-is to date have found the information it develops to be an important part of good planning for their future. By further considering and applying the principles of strong sustainability and ecological economics to the existing framework it provides, the SCD practitioner can extend this tool to become a critical element in the process of community-based education toward genuine sustainability. In the absence of a strong ecological economics approach, this tool remains an integral part of the community economic development practitioner's tool kit.

Conclusion

By examining the defining characteristics of strong sustainability, sustainable community development and ecological economics, it becomes apparent that a logical relationship exists between them. The convergence of ideas in the bodies of literature discussed above leads us to conclude that effective sustainable community development requires an economics of sustainability, best represented by ecological economics. Conversely, the application of a neo-classical or environmental economics model will likely limit the capacity of SCD work to address the symptoms and root causes of unsustainability. In sum, we suggest that the achievement of sustainable community development may, in fact, be contingent on the application of a strong sustainability and ecological economics model.

Notes

- [1] Daly refers to 'scale' as the '*physical size of the economy relative to the containing and finite ecosystem [the planet]*' (Daly, 2003.) Costanza et al. state that '[s]cale refers to the physical volume of throughput, the flow of matter-energy from the environment . . . and back to the environment. It may be thought of as . . . population times per capita resource use . . . Its significance is relative to the natural capacities of the ecosystem to regenerate the inputs and absorb the waste outputs on a sustainable [read permanent] basis' (Costanza et al., 1997).
- [2] 'Distribution refers to the relative division of the resource flow, as embodied in final goods and services, among alternative people. A good distribution is one that is just or fair . . . The policy instrument for bringing about a more just distribution is transfers, such as taxes and welfare payments' (Costanza et al., 1997).

References

- Andriantiatsaholiniaina, L. A., Kouikoglou, V. S. & Phillis, Y. A. (2004) Evaluating strategies for sustainable development: fuzzy logic reasoning and sensitivity analysis, *Ecological Economics*, 48(2), pp. 149–172.
- Aneilski, M., Griffiths, M., Pollock, D., Taylor, A., Wilson, J. & Wilson, S. (2001) *Alberta Sustainability Trends 2000: the GPI report 1961–1999* (Drayton Valley, Alberta, Pembina Institute).
- Baker, S., Kousis, M., Richardson, D. & Young, S. (Eds) (1997) *The Politics of Sustainable Development* (London, Routledge).
- Berkes, F. & Folkes, C. (Eds) (1998). *Linking Social and Ecological Systems* (Cambridge, Cambridge University Press).
- Blakely, E. J. & Milano R. J. (2001) Community economic development, in: N. Smelser & P. Baltes (Eds) *The International Encyclopedia of the Behavioral Sciences* (New York, Elsevier).
- Borghesi, S. & Vercelli, A. (2003) Sustainable globalization, *Ecological Economics*, 44(1), pp. 77–89.
- Boulding, K. (1973) The economics of the coming spaceship earth, in: H. Daly (Ed.), *Toward a Steady-State Economy* (San Francisco, W. H. Freeman).
- Boyd, D. (2003) *Unnatural Law: rethinking Canadian environmental law and policy* (Vancouver, UBC Press)
- Bridger, J. C. & Luloff, A. E. (1999) Toward an interactional approach to sustainable community development, *Journal of Rural Studies*, 15(4), pp. 377–387.
- Campbell, C. L. & Heck, W. W. (1997) An ecological perspective on sustainable development, in: F. D. Muschett (Ed.) *Principles of Sustainable Development* (Delray Beach, Florida, St Lucie Press).
- Cobb, C., Glickman, M. & Chelsog C. (2001) The Genuine Progress Indicator 2000 update. Redefining Progress, <www.redefiningprogress.org/publications/2000_gpi_update.pdf> (accessed June 2004).
- Costanza, R. (1999) The ecological, economic, and social importance of the oceans, *Ecological Economics*, 31(2), pp. 199–213.
- Costanza, R., Cumberland, J., Daly, H., Goodland, R. & Norgaard, R. (1997) *An Introduction to Ecological Economics* (Boca Raton, Florida, St Lucie Press).
- Czech, B. (2001) A potential Catch-22 for a sustainable American ideology, *Ecological Economics*, 39(1), pp. 3–12.
- Czech, B. (2002) The imperative of macroeconomics for ecologists, *BioScience*, 52(11), pp. 964–966.
- Daly, H. E. (1973) *Toward a Steady State Economy* (San Francisco, W. H. Freeman).
- Daly, H. E. (2003) Ecological economics: the concept of scale and its relation to allocation, distribution, and uneconomic growth. Unpublished conference proceedings, Canadian Society for Ecological Economics, 16–19 October 2003, Jasper, Alberta, <www.cansee.org>.
- Daly, H. E. & Cobb, J. B., Jr (1989) *For the Common Good: redirecting the economy toward community, the environment, and a sustainable future* (Boston, Beacon Press).
- Davidson, C. (2000) Economic growth and the environment: alternatives to the limits paradigm, *BioScience*, 50(5), pp. 433–440.
- Davidson, S. M. (2002) Reviews: on environmental thought at the turn of the century, *Natural Resources Journal*, 42(2), pp. 433–446.
- Dickens, G. A. P. (2003) Changing our environment, changing ourselves: critical realism and transdisciplinary research, *Interdisciplinary Science Reviews*, 28(2), pp. 95–105.
- Dinda, S., Coondoo, D. & Pal, M. (2000) Air quality and economic growth: an empirical study, *Ecological Economics*, 43(3), pp. 409–423.
- Ekins, P., Simone, S., Deutsch, L., Folke, C. & de Groot, R. (2003) A framework for the practical application of the concepts of critical natural capital and strong sustainability, *Ecological Economics*, 44(2–3), pp. 165–185.
- England, R. W. (1998) Measurement of social-well-being: alternatives to gross domestic progress, *Ecological Economics*, 25(1), pp. 89–103.

- Farina, A., Johnson, A. R., Turner, S. J. & Belgrango, A. (2003). 'Full' world versus 'empty' world paradigm at the time of globalization, *Ecological Economics*, 45(1), pp. 11–18.
- Field, B. C. & Olewiler, N. D. (1995) *Environmental Economics* (Toronto, McGraw-Hill Ryerson).
- Fontan, J. M. (1993) *A Critical Review of Canadian, American, and European Community Economic Development Literature* (Vancouver, CCE/Westcoast).
- Funtowicz S. & Ravetz J. R. (1999) Post-normal science—an insight now maturing, *Futures*, 31, pp. 641–646.
- Gailus, J. (2000) *Bringing Conservation Home: caring for land, economies, and communities in western Canada* (Bozeman, Montana, Sonoran Institute).
- Georgescu-Roegen, N. (1971) *The Entropy Law and the Economic Process* (Cambridge, MA, Harvard University Press).
- Gilpin, A. (2000) *Environmental Economics: a critical review* (Chichester, England, John Wiley).
- Hamstead, M. (2001) A tool-book for economic education and trend analysis in Canadian rural communities. Master's project, University of Calgary.
- Hawken, P. (1994) *The Ecology of Commerce: a declaration of sustainability* (New York, Harper Business).
- Hawken, P., Lovins, A. & Lovins, L. H. (1999) *Natural Capitalism: creating the next industrial revolution* (Boston, Little, Brown).
- Hoff, M. D. (1998) *Sustainable Community Development: studies in economic, environmental and cultural revitalization* (Boca Raton, Florida, CRC Press).
- Kinzig, A. P. (2001) Bridging disciplinary divides to address environmental and intellectual challenges, *Ecosystems*, 4, pp. 709–715.
- Korber, D. & Rasker, R. (2001) *Measuring Change in Rural Communities: an economics workbook for western Canada* (Montana, Sonoran Institute).
- Love, G. A. (1999) Ecocriticism and science: toward consilience? *New Literary History*, 30(3), pp. 561–576.
- Macintosh, R. (1998) Towards a sustainable economy: grounding and integrating themes in environmental economics, (www.pembina.org) (accessed 5 April 2001).
- MacIntyre, G. A. (1998). *Perspectives on Communities: a community development roundtable* (Sydney, UCCB Press).
- Maser, C. (1997) *Sustainable Community Development: principles and concepts* (Delray Beach, Florida, St Lucie Press).
- Muller, A. (2003) A flower in full blossom? Ecological economics at the crossroads between normal and post-normal science, *Ecological Economics*, 45(1), pp. 19–27.
- Nozick, M. (1993) Five principles of sustainable community development, in: E. Shragge (Ed.), *Community Economic Development: in search of empowerment* (Montreal, Black Rose Books).
- Power, T. M. (1991) Ecosystem preservation and the economy in the Greater Yellowstone area, *Conservation Biology*, 5(3), pp. 395–404.
- Power, T. M. (1996) *Lost Landscapes and Failed Economies: the search for a value of place* (Washington, Island Press).
- Quinn, M. S. (2002) Ecosystem-based management, in: D. Thompson (Ed.) *Tools for Environmental Management: a practical introduction and guide* (Gabriola Island, British Columbia, New Society Press), pp. 370–382.
- Redefining Progress (2001) Genuine Progress Indicator, (<http://www.rprogress.org/projects/gpi/>) (accessed March 2003).
- Rees, W. (1989) Defining 'sustainable development', *CHS Research Bulletin.*, BU89–1, University of British Columbia, Centre for Human Settlements (Vancouver, University of British Columbia).
- Roseland, M. (1998) *Toward Sustainable Communities* (Gabriola island, British Columbia, New Society Press).
- Roseland, M. (2000) Sustainable community development: integrating environmental, economic, and social objectives, *Progress in Planning*, 54(2), pp. 73–132.

- Scruton, R. (1983) *A Dictionary of Political Thought* (London, Pan).
- Shuman, M. (1998) *Going Local: creating self-reliant communities in a global age* (New York, Free Press).
- Sierra Business Council (1999) *Sierra Nevada Wealth Index: understanding and tracking our region's wealth* (Truckee, California).
- Soule, M. E. & Terborgh, J. (Eds) (1999) *Continental Conservation: scientific foundations of regional reserve networks* (Washington, Island Press).
- Stark, C. & Cestero, B. (2001) *Landscapes, Wildlife, and People: a community workbook for habitat conservation* (Montana, Sonoran Institute).
- Stavins, R. N., Wagner, A. F. & Wagner, G. (2003) Interpreting sustainability in economic terms: dynamic efficiency plus intergenerational equity, *Economics Letters*, 79(3), pp. 339–343.
- United Nations Development Programme (2003) *Human Development Report 2003 Millennium Development Goals: a compact among nations to end human poverty* (New York, Oxford University Press).
- Unruh, G. C. & Moomaw, W. R. (1998) An alternative analysis of apparent EKC-type transitions, *Ecological Economics*, 25(2), pp. 221–229.
- Wear, D. N. (1999) Challenges to interdisciplinary discourse, *Ecosystems*, 2(4), pp. 299–301.
- Weinberg, A. S., Pellow, D. N., Schaniberg, A. (2000). *Urban Recycling and the Search for Sustainable Community Development* (Princeton, Princeton University Press).
- World Commission on Environment and Development (1987) *Our Common Future* (New York, Oxford University Press).