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Perspective

An Integrative Approach to Quality of Life Measurement, Research, and Policy

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Abstract

While Quality of Life (QOL) has long been an explicit or implicit policy goal, adequate definition and measurement have been elusive. Diverse "objective" and "subjective" indicators across a range of disciplines and scales, and recent work on subjective well-being (SWB) surveys and the psychology of happiness have spurred renewed interest. Drawing from multiple disciplines, we present an integrative definition of QOL that combines measures of human needs with subjective well-being or happiness. QOL is proposed as a multiscale, multi-dimensional concept that contains interacting objective and subjective elements. We relate QOL to the opportunities that are provided to meet human needs in the forms of built, human, social and natural capital (in addition to time) and the policy options that are available to enhance these opportunities. Issues related to defining, measuring, and scaling these concepts are discussed, and a research agenda is elaborated. Policy implications include strategies for investing in opportunities to maximize QOL enhancement at the individual, community, and national scales.

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1. INTRODUCTION

Enhancing Quality of Life (QOL) has long been a major explicit or implicit life-style and policy goal for individuals, communities, nations, and the world (Schuessler and Fisher, 1985; Sen 1985). But defining QOL and measuring progress towards improving it have been elusive. Currently, there is renewed interest in this issue both in the academic and popular press. A search of the Institute for Scientific Information (ISI) database from 1982-2005 reveals over 55,000 academic citations utilizing the term "quality of life," spanning a large range of academic disciplines. In the popular press, quality of life is also a critical element in the ongoing discourse on economic prosperity and sustainability, but it has often been subsumed under the heading of "economic growth" under the assumption that more income and consumption equates to better welfare. This equation of consumption with welfare has been challenged by several authors, notably Sen (1985) and Nusbaum (1995) and is now also being challenged by recent psychological research (Diener and Lucas, 1999; Easterlin, 2003).

Alternative measures of welfare and QOL are therefore actively being sought. For example, both the New York Times and the Wall Street Journal have carried articles about the country of Bhutan's decision to use "Gross National Happiness" as their explicit policy goal rather than GNP.

Recent research on QOL has focused on two basic methodologies of measurement. The First—termed "subjective well-being" (SWB)—focuses upon self-reported levels of happiness, pleasure, fulfillment and the like (see Diener and Lucas (1999) and Easterlin (2003)). The other utilizes so-called "objective" measurements of QOL—quantifiable indices generally of social, economic, and health indicators (UNDP, 1998)—that reflect the extent to which human needs are or can be met. For example, objective measures include indices of economic production, literacy rates, life expectancy, and other data that can be gathered without directly surveying the individuals being assessed. Objective indicators may be used singly or in combination to form summary indexes, such as the UN's Human Development Index (Sen, 1985; UNDP, 1998). While these measurements may provide a snapshot of how well some physical and social needs are met, they are narrow, opportunity-biased, and cannot incorporate many issues that contribute to QOL such as identity, participation, and psychological security. It is also clear that these so-called "objective" measures are actually proxies for experience identified through "subjective" associations of decision-makers; hence the distinction between objective and subjective indicators is somewhat illusory.

Subjective indicators of QOL gain their impetus, in part, from the observation that many objective indicators merely assess the opportunities that individuals have to improve QOL rather than assessing QOL itself. Thus economic production may best be seen as a *means* to a potentially (but not necessarily) improved QOL rather than an end in itself. In addition, unlike most objective measures of QOL, subjective measures typically rely on survey or interview tools to gather respondents' own assessments of their lived experiences in the form of self-reports of satisfaction, happiness, well-being or some other near-synonym. Rather than presume the importance of various life domains (e.g., life expectancy or material goods), subjective measures can also tap the perceived significance of the domain (or "need") to the respondent. Diener and Suh (1999) provide convincing evidence that subjective indicators are valid measures of what people perceive to be important to their happiness and well-being.

While both measurement methods have offered insight into the QOL issue, there are a number of limitations to using either of these approaches separately. What seems best, then, is to attempt an approach to QOL that *combines* objective and subjective approaches. Our integrative definition of QOL is as follows:

Quality of Life (QOL) is the extent to which objective human needs are fulfilled in relation to personal or group perceptions of subjective well-being (SWB, figure 1). Human needs are basic needs for subsistence, reproduction, security, affection, etc. (see figure 1). SWB is assessed by individuals' or groups' responses to questions about happiness, life satisfaction, utility, or welfare. The relation between specific human needs and perceived satisfaction with each of them can be affected by mental capacity, cultural context, information, education, temperament, and the like, often in quite complex ways. Moreover, the relation between the fulfillment of human needs and overall subjective well-being is affected by the (time-varying) weights individuals, groups, and cultures give to fulfilling each of the human needs relative to the others.

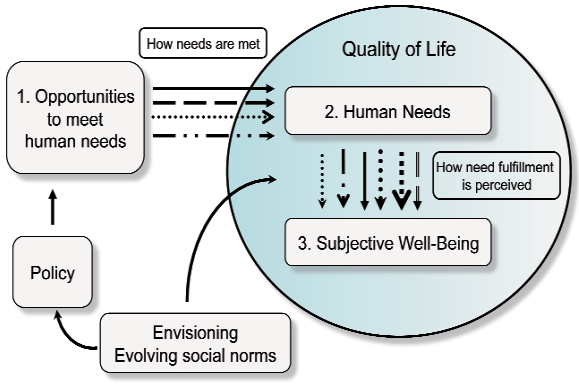


FIGURE 1: Quality of Life (QOL) is represented as the interaction of human needs and the subjective perception of their fulfillment, mediated by the opportunities available to meet the needs. 1. Opportunities to meet human needs now and in the future: Built, Human, Social and Natural Capital and time. 2. Human needs include: Subsistence, Reproduction, Security, Affection, Understanding, Participation, Leisure, Spirituality, Creativity, Identity and Freedom. 3. Subjective Well Being (happiness, utility and welfare) for individuals and/or groups.



With this definition, the role of policy is both to create opportunities for human needs to be met (understanding that there exists a diversity of ways to meet any particular need), and to create conditions that increase the likelihood that people will effectively take advantage of these opportunities (figure 1). Built, human, social, and natural capitals (Costanza et al. 1997) represent one way of categorizing those opportunities. Time is also an independent constraint on the achievement of human needs.

Social norms affect both the weights given to various human needs when aggregating them to overall individual or social assessments of SWB, and also policy decisions about social investments in improving opportunities. Social norms evolve over time due to collective population behavior (Azar, 2004). The evolution of social norms can also be affected by conscious shared envisioning of preferred states of the world (Costanza, 2000).

2. HUMAN NEEDS, OPPORTUNITIES AND PREFERENCES

The needs identified in Figure 1 were derived primarily from an integration of Max-Neef's (1992) "Matrix of Human Needs" and Nussbaum and Glover's (1995) "Basic Human Functional Capabilities." We also consulted other research regarding basic human needs including Maslow's "Hierarchy of needs" (1954), Sirgy et al.'s "Need Hierarchy Measure of Life Satisfaction" (1995), Cummins' "Comprehensive Quality of life scale ComQol-A-5" (1997), Greenley, Greenberg, and Brown's "Quality of Life Questionnaire" (1997) and Frisch's "Quality of Life Inventory" (1998). It is important to acknowledge that some of the needs we propose are overlapping and some may be conflicting. For example, subsistence and reproduction needs may overlap, whereas the recreation needs of one person may conflict with the subsistence needs of another.

The ability of humans to satisfy these basic needs arises from the opportunities available and constructed from social, built, human and natural capital (and time). Policy and culture help to allocate the four types of capital as a means for providing these opportunities. Here we define social capital as those networks and norms that facilitate cooperative action (Putnam, 1995); human capital as the knowledge and information stored in our brains, as well as our health and labor potential; built capital as manufactured goods (tools, equipment, consumer goods), buildings, and infrastructure; natural capital as the structure of natural ecosystems. All forms of capital are stocks that generate flows of benefits. For example, the benefits of natural capital are the renewable and nonrenewable goods and services provided by ecosystems (Costanza and Daly, 1992).

These capitals and the benefits they provide, individually and in combination, comprise the inputs to satisfying the various human needs. The differing characteristics of these four types of capital can be used to help guide policy and decision making with regard to meeting human needs. For example, social capital and information (a component of human capital) do not wear out through use. They can actually improve and grow through use (this is how our social networks and scientific knowledge generally grow). However, they can also disintegrate extremely rapidly. Built capital and the labor element of human capital wear out through use, following the second law of thermodynamics. Some aspects of natural capital improve through use and repair themselves through solar energy capture. Recognition of the varying natures of these four types of capital will help to most efficiently provide opportunities to meet human needs.

From this perspective, QOL is a multidimensional construct emerging from the evaluation of multiple needs on the individual, community, national, and global levels. Each need is assumed to contribute to different degrees (that vary across time) to overall QOL. Overall QOL at any point in time is a function of (a) the degree to which each identified human need is met, which we will call "*fulfillment*" and (b) the *importance* of the need to the respondent or to the group in terms of its relative contribution to their subjective well-being. In the simplest of strategies, measurement would consist of two distinct scales to assess each item regarding a human need; one of the scales would record the degree of *fulfillment* and the other would record the relative importance of the need. A basic aggregation approach, such as simple summation or averaging, might be adequate to obtain a group assessment of QOL. Alternatively, a more complex aggregation scheme might be used for some purposes. For example, research on the relationship between the average of the individual assessments of a group and the whole group's collective assessment after discussion might be used to build aggregation schemes that better reflect the group's collective assessment than simple averaging.

Thus, in designing an assessment of QOL, the goal should be to create a tool that will capture the weighting that is being used by a particular person (or group of persons) at a particular time and place. In order to achieve this, useful population samples are needed to empirically identify and define the weights. This process would provide valuable information regarding:

- potential relationships between the fulfillment and the importance of needs
- possible discrepancies between fulfillment and importance grouped by type of capital required to fulfill each need
- variation in weights by population characteristics
- variation in overall QOL (e.g., from one community to another)

By their nature QOL measures represent a snapshot in time. It is understood that any measurement data used for predictive purposes would need to be collected over sufficiently long time periods to successfully capture or model the co-evolution of humans with their environment and develop an effective knowledge base. Of course weightings will fluctuate as a result of intentional as well as unconscious manipulation by individuals through re-evaluation strategies, such as social comparisons, and through goal attainment.

The analysis of QOL is further complicated by the different spatial and temporal scales of analysis at which human needs may be understood. There is no "correct" scale for such assessments. The "scale of interest" is determined by: 1) the question or problem of interest; and 2) the scale at which we look to find the pattern (e.g., individual, regional, or national level). For example, to identify patterns at the individual level or very small temporal scales, we must focus our attention on larger spatial regions or longer temporal scales so as to find statistical ensembles for which observations become more regular.

3. A RESEARCH AGENDA

By integrating the so-called *subjective* and *objective* measures of QOL we get a more realistic picture of the important inputs and variables for improving QOL. Our integrative definition provides a framework for further research including questions such as: How can weightings be aggregated across various spatial and temporal scales? How do weightings vary over time? Research along these lines would prove invaluable for creating effective policy, especially where tradeoffs are present. It is also essential to investigate the ways in which individual and group weightings are vulnerable to (mis)information and (mis)perception, as well as to understand the relationship between individual and societal goals (Ehrlich and Kennedy, 2005).
In addition, various methods to measure people's subjective preferences regarding objective functionings and capabilities could be compared, including choice experiments, multi-criteria decision analysis, and deliberative group methods.

The application of QOL assessment to sustainability issues presents another vital avenue of research. Answering the question: "What is the role of ecological sustainability for QOL?" could help integrate the social and scientific policy agendas and hence pay double dividends. An even bigger question involves examining how all of the four capitals, along with their attendant policies and macro-conditions, affect QOL (both directly and in transaction with one another) across temporal and spatial scales (Vemuri and Costanza, 2006). This issue may, in fact, be an umbrella theme for future interdisciplinary work on QOL.

4. POLICY IMPLICATIONS

The policy implications of a better understanding and measurement of QOL are likely to be profound. As mentioned above, Bhutan has recently declared that "gross national happiness" is its explicit policy goal (Bond, 2003). In fact, several authors—including most recently Richard Layard (2005) —have recommended that our primary social policy goal should be the increase in QOL for this and future generations. We agree with Layard and recommend a refocusing of social policy around the goal of long-term, sustainable QOL improvement. As we have discussed, QOL improves according to our abilities to meet human needs as well as our perception of how well these needs are met. This integrated framework for analyzing and assessing QOL brings out several policy recommendations, including:

- Investment in built, natural, human, and social capital in balanced ways that create the opportunities for people to fulfill their needs.
- Investment in capitals and opportunity creation that provide the greatest return on investment, as measured by increase in QOL.
- Divestment when the marginal utility equals zero and reallocation of resources where marginal utility is highest (e.g., urban investment in natural amenities or rural investment in built infrastructure).
- Explicit adjustment of social norms and preferences, by correcting misinformation that leads to inefficient resource allocation; for example, people focus too much on increasing income despite research evidence that increases in individual income have no lasting effect on people's reported level of happiness (Easterlin, 2003).

We have proposed an integrated definition and measurement tool for QOL that should guide a stronger research agenda and improve our understanding of QOL issues. This improved understanding can, in turn, be used to guide public policy toward the goal of enhancing QOL across multiple temporal and spatial scales, and across a broad diversity of cultural contexts in a long-term, sustainable manner. An integrated QOL measurement tool will aid in distinguishing between those policies or lifestyle choices that actually improve QOL and those that do not. In this way, informed policy can not only create the necessary opportunities, but also provide the information crucial to evaluating individual decisions with the result of long-term improvement in QOL.

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related to QOL in order to develop a new, broader consensus on this critical issue. The conference was supported by the University of Vermont Honors College.

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