



The University of Sydney
AUSTRALIA

Systems for Social Sustainability: Global Connectedness and the Tuvalu Test



Tuvalu at the Commonwealth Games, Melbourne, 2006.
Photograph by Geoff Ludbrook



The University of Sydney
Integrated Sustainability Analysis™



Systems for Social Sustainability: Global connectedness and the Tuvalu test

DRAFT

*ISA Research Paper 02-06
For further information please contact*

www.isa.usyd.edu.au

Joy Murray, j.murray@physics.usyd.edu.au
Christopher Dey, c.dey@physics.usyd.edu.au
Manfred Lenzen m.lenzen@physics.usyd.edu.au
School of Physics, A28, The University of Sydney NSW 2006, Australia
ph +61 / 2 / 9351-2627, fax +61 / 2 / 9351-7726

Systems for Social Sustainability: Global connectedness and the Tuvalu test

Table of contents

Executive Summary.....	4
1. Introduction.....	5
2. Importance of the social aspect of TBL.....	6
2.1 Social impact of doing business.....	6
2.2 Part/whole or system of relationships.....	7
2.3 The living system in its environment.....	8
2.4 Summary.....	9
3. Social sustainability.....	9
3.1 What is it?.....	9
3.2 Summary.....	11
4. Current approaches to the social bottom line.....	12
4.1 Community work or social capital.....	12
4.2 Summary.....	14
5. Indicators.....	14
5.1 Endpoint or midpoint?.....	15
5.2 Endpoint measures and powerful metaphors.....	16
5.3 Midpoint measures and mean lives.....	18
6. Conclusion.....	19
Acknowledgements.....	20
References.....	21

Executive Summary

We discuss the social dimension of the TBL as the social impact of (an organisation) doing business. Acknowledging the interconnectivity of social, environmental, and economic impacts on a local scale we recognise that everything we do together on this planet is connected through time and space in a seamless web of interactions. Moreover through this interdependency of living system and environment our actions are bound by something we refer to as human ethics. This brings us to the idea that the social dimension of TBL, which seeks ethical solutions to local social dilemmas is striving towards something that we call social sustainability and in some way is contributing to an ethical future for living systems. Hence the discussion moves from the social bottom line of an organisation, or workplace, into the notion of *social sustainability* and society as a whole because all of society is interlinked.

We explore problems inherent in the definition of social sustainability. For example, we cannot know how long something must persist for it to be called 'sustainable'. Or, if social sustainability connotes an ethical position based on principles of equity, whose notion of 'equity' should prevail and be sustained; or will an identified social system, pronounced 'sustainable' today 'fit' in a future world. If social sustainability is something utopian and unattainable like lasting global harmony, perhaps we should shift the focus of our debate to something attainable like a sustainable process of learning as we communicate as living systems in our environment over time.

In the broader community social sustainability draws on the discourse of social welfare and is often viewed through a social capital framework. Social capital may allow us to accrue well-being but 'well-being' itself is just one of many culturally defined constructs. Instead perhaps we should ask questions about how living systems are able to make profound changes in their world-view; and to do this we need to begin with a global perspective and something more fundamental than the construct of 'well-being'. We suggest *life span* as a fundamental social indicator and suggest a metaphor, *the Tuvalu Test*, to convey its complexity.

The *Tuvalu Test* asks how much time, on average, do we have to pass; then, how much of our time do we have to pass in providing food, water, shelter, health and safety and how much do we have left for pass-time. Then it asks – but how much of the pass-time of others makes trouble for some and impinges on the time we/they have to pass.

We conclude that *social sustainability* has a number of connotations, is a useful concept for advancing the sustainability debate, and can usefully be applied to a consideration of enduring social systems. We can apply the Tuvalu test, use powerful metaphors and good numbers to help promote: global communication systems so that all can participate in multiple conversations; the sharing of our planet's resources to satisfy everyone's basic needs; the need for time to communicate with family and friends for health and well-being, and with family, friends and the rest of the world for education and learning.

1. Introduction

A recent workshop¹ addressing social sustainability and the triple bottom line² (TBL) brought together a range of participants from business, industry, government and non-government organisations as well as academics from the social as well as ‘hard’ sciences. The aim of the workshop was to find common ground on which to build a set of useful social indicators to add to an existing suite of quantitative TBL indicators that was currently dominated by environmental concerns (Integrated Sustainability Analysis, 2006). Workshop participants spoke of: workplace experiences; corporate social responsibility (CSR)³; the sociology of power; cultural change; the ethics of leadership (e.g. Boele et al, 2001; Fabig & Boele, 2003); and quantitative TBL accounting methodologies (e.g. Foran et al, 2005). There seemed to be no common language and little common ground until one keynote speaker observed that the previous five presenters had all talked about ‘people’ and ‘people issues’ in the process of describing their attempts to collect and analyse TBL data. The speaker went on to say that, although we often forget this, it is the people who instigate, create and sustain change. Stimulus for change, she said, comes from people pressure and people act on perceptions and prejudices not necessarily on facts. The questions implicit in the speaker’s comments - what are ‘facts’, what are people’s perceptions and how can they be influenced, and what are the politics of sustainability (see Cox, 2003) – led to a debate that almost polarised the room!

The ensuing discussion raised many of the issues addressed by Ulrich (2002, p.7) in discussing the work of Churchman. Some speakers echoed Ulrich’s point that “[T]he causal scale of our actions has extended to include world-wide connected socioeconomic processes ... one now often needs extensive knowledge to anticipate and assess an action’s impacts. The once clear-cut boundary between ethics and expertise has become blurred and difficult to draw.”⁴ The workshop discussion illuminated the fundamental need for multiple approaches to addressing, discussing and promoting complex sustainability issues so that expert opinions are accessible, information is shared, and people are able to make decisions about trustworthiness and ethical behaviour. It highlighted the need for reliable data while recognising that expert opinions and ‘facts’ are worthless unless they are heard and trusted by people within and outside organisations who ultimately make decisions either because of positions of power or because of the power of public opinion.

Towards the end of the workshop round-table discussions among the 40 participants concluded that the complexity and interdependent nature of sustainability reporting across the triple bottom line makes it hard to disentangle social impacts from environmental and economic. However participants had different views on how the social impact of doing business should be ‘measured’ or ‘accounted for’. Some believed that the best way to ‘measure’ social sustainability was through something like the Corporate Responsibility Index (BITC, 2005; Longstaff, 2000) or with quality of life indicators. Others believed that a quantitative social ‘footprint’ measure and methodology were necessary - akin to the concept of the ecological footprint as for example embodied in the Global Footprint Network⁵.

¹ Sustainability Reporting Project Update & Social Indicators Workshop, University of Sydney, Dec 3, 2004

² accounting for the social, environmental and economic impacts of doing business (i.e. three bottom lines rather than the usual one – financial bottom line)

³ e.g. Corporate Responsibility Index: <http://www.corporate-responsibility.com.au/> accessed 2/01/06

⁴ http://www.geocities.com/csh_home/firm.html accessed 24/02/06

⁵ <http://www.footprintnetwork.org/> accessed 2/01/06

So what to make of all this? There is no doubting the importance attributed by all workshop participants to the social aspect of TBL. However knowledge bases and therefore, language, differed across the room. Words like *resilience*, *democracy*, *community* and a reference to *charitable deeds* suggested the tensions between some of the traditional welfare practices of governments and philanthropic approaches of corporate social responsibility, and the more recent approach to social justice through ideas like *social capital*. Others approached the debate from a mathematical perspective reaching for a quantitative measure or ‘social footprint’ to include, say, OH&S statistics, employment rates, taxation, and wages and salaries. Another group, looking for more certainty than a *social capital* framework might afford but not the hard-edged science of Integrated Sustainability Analysis (ISA), suggested using a quality of life index. Most agreed that human relationships were the base upon which social change was built and that if this were so then there would always be a diverse range of approaches to TBL accounting and to the meaning and usefulness of the notion of *social sustainability*.

The authors, who had also been responsible for the workshop, committed to collating the discussion and expanding on the various threads of the debate - qualitative and quantitative. They also committed to searching for what unified, rather than what divided, the group. They suggested that a unifying paradigm may be found in cybernetics and that a social indicator set may be made possible by peeling back the layers of social constructs. Below are the results of that work, offered not as answers to such a multi-faceted problem, but as a means for furthering the discussion. We begin with the interdependent nature of social, environmental and economic aspects of TBL, the prime importance of the social, and an explanation of why it might be so important drawn from Maturana and Varela’s work on living systems and with reference to Luhmann’s social systems. This is followed by: a discussion of the meaning of *social sustainability*; a look at current approaches to the social bottom line and social sustainability first from a social welfare perspective; and then from the perspective of the current TBL debate around, for example, the Global Reporting Initiative (2002), the Global Footprint Network (2005) and input-output analysis (Foran et al, 2005). A way of accounting for the social bottom line is offered primarily as metaphor but perhaps with the potential to stimulate thinking towards method.

2. Importance of the social aspect of TBL

2.1 Social impact of doing business

The purpose of trying to assess the social impact of doing business is, presumably, to help understand and account for the consequences of doing business on the social well-being of communities affected by that business. This implies that with understanding comes action to maintain or improve social well-being for everyone. However social well-being cannot be disentangled from economic well-being⁶ (for example, we need the economic means to maintain social structures and to participate in society) neither can it be divorced from a healthy environment because as Lehtonen (2004:204) says many environmental assets “fulfil not only ecological, but also ... social functions, through their critical contribution to human mental well-being and pleasure, as well as being a source of ethical and cultural meaning”. If divorced from the context of the economic and environmental, improvements in social well-being could be at

⁶ The notion that the ideal state is one of being ‘socially and economically *well*’ and that it is to be strived for seems to be the current guiding principle by which we measure society (witness the international well being index (http://acqol.deakin.edu.au/inter_wellbeing/index.htm ; <http://www.finfacts.ie/costofliving.htm>), and the UK development of a *well being* indicator (HM Government, 2005)). Luhmann (1997) cites *happiness* and *similarity of living conditions* as previous guiding principles. It is important to remember that they are themselves socially/culturally constructed and not all societies would rate them important in living their lives whatever others might wish for them.

the expense of others (say taxes were reduced for some to the extent that there was insufficient funding to pay for social infrastructure for all or social cohesion in one workplace was achieved at the expense of the environment of another social group through for example, water-thirsty gardens, free polystyrene cups at the water fountain, workplace subsidized take away foods or four-wheel drive cars). Within the context of economic and environmental impact the assessment of social impact can reveal unintended consequences embedded in decision making and expose the interdependencies of the total social/economic/environmental system (Oakley & Buckland, 2004). Accounting for the social impact of doing business then, only makes sense if it is recognized as part of an interdependent system (that eventually spreads out to cover all of existence on this planet and beyond). Any boundaries applied must be recognized as artificial and expedient, and although some partitioning off for the purpose of accounting and (limited) understanding may serve some purpose to organisations (e.g. in order to report to stakeholders on specific, local initiatives) it must be recognized that it is not possible to separate the social from the economic and environmental or to separate any of them from what happens in the rest of the global community. Gallopin (1997:19) recognizes this in his argument for an holistic approach to the development of indicators for sustainability, he suggests that the “systemic nature of many aspects of sustainable development points to the importance of searching for fundamental whole-system attributes for which appropriate indicators could be devised”. Everything that we do is ultimately linked to everything else in a seamless web of connections that transverse time and place. Thus an approach that reduces the whole to the sum of its parts will never have the explanatory power of an understanding of what makes a sustainable system (Maturana & Varela, 1987; Richardson, 2004). Below is a short digression into the whole/parts/systems debate, included as a platform from which to develop an argument for a systems approach to sustainability, and as a foundation for thinking about what is meant by *social sustainability* and what might constitute *social indicators*.

2.2 Part/whole or system of relationships?

The shift from a parts/whole perspective to viewing systems in terms of networks of relationships is accredited to theoretical biologist Bertalanffy (1968). Rather than wholes to be dissected into parts he used the distinction between system and environment as an explanatory mechanism⁷. In this way of thinking parts of a living system are understood only in the context of the whole. In reviewing this shift in perspective Capra refers to systems thinking as ‘contextual’ thinking or ‘environmental’ thinking (1996:36-37). What we call a part, he says, “is merely a pattern in an inseparable web of relationships” in which “no part is more fundamental than the others” (1996:39). This relational system/environment world is non-hierarchical; system and environment are seen as an interacting whole. But how, according to some who work in the field of cybernetics, do these systems and environments interact?

2.3 The living system in its environment

Biologists Maturana and Varela (1987) claim that we, like all living systems, are structurally determined systems. By this they mean that the way in which we respond to perturbations (or irritations) in our environment is determined by our structure. But the environment is also a structurally determined system. Recurrent interactions of both living system and environment will result in structural changes in both system and environment. Who we, as living systems, are at this instant and the environment we find ourselves in mutually specify each other so that each

⁷ Capra (1996:43) cites the work of a Russian medical researcher, Alexander Bogdanov (1913-1917) who developed a sophisticated systems theory 20-30 years before Bertalanffy published his first paper on his ‘general systems theory.’ (for introductory chapter reprinted see Midgely, G. (2003) *General Systems Theory, Cybernetics and Complexity. Systems Thinking Volume 1* Sage Publications).

contributes to creating the world of the next instant, and so on, creating the world by living in it. This process Maturana and Varela call *co-ontogenic structural drift*. In co-ontogenic structural drift, they say, the system does not adapt to the environment as in the classical system-environment model (Krohn, Koppers, Novotny, 1990) but both change over time as they become structurally coupled (Maturana, 2002); either they ‘fit’ together or separate or disintegrate (Maturana et al, 1987; Maturana, 2002). Luhmann (1995, 1997) uses this concept in his work on human social systems. In a social context, he says, *communication* is the social system and everything else including living systems, is the environment in which communication operates (i.e. living systems – in this case human actors - are part of the environment of social systems rather than composing them). However, he says, “[T]he concept of the environment should not be misunderstood as a kind of residual category. Instead, relationship to the environment is *constitutive* in system formation” (Luhmann, 1995:176, italics in the original). Communication, he says, becomes structurally coupled with the consciousness of individuals (1997) and, “[O]nly consciousness can produce the noise necessary for the emergence and evolution of social order” (1997:4). A particular social system arises out of the difference between system (communication) and environment as they bump up against each other and (because of their differences) change over time as they find ways to ‘fit’.

Viewed through Luhmann’s social frame communication and its environment, which is the consciousness of individuals, change over time as they become coupled in a never-ending reciprocal relationship. Viewed through Maturana and Varela’s biological frame all living systems and their environments (which include other living systems as well as all communication) become coupled so that they grow and change together, each influencing the possibilities of the other. In both cases we are structurally changed in the process of living and communicating over time. This means, as Fell and Russell (1993:35) say, “that everything we have ever done together in this world could be a part of who we are and what we do today” and “[w]e cannot know what the future holds, but we can know that everything we do (or say) contributes significantly to it . . . This awesome responsibility is what we regard as the biological basis of our human ethics.” (Fell & Russell, 1993:35; see also von Foerster, 1992 on cybernetics and ethics).

Thus the social impact of doing business is part of the web of interactions that are life on this planet. Socially sustainable activities, like all of our activities, become part of who we are and what we do. They are activities that, because they become part of who we are and what we do (and the ‘we’ referred to includes all of humanity including ourselves, carrying with us our histories, and future generations) must, for us if we accept this position, be bound by human ethics. Moreover if human ethics have a biological basis, as suggested by Fell and Russell above, it is probably reasonable to suggest, as Maturana (1988) argues, that they play a role in human survival. It is likely that the round table discussants, mentioned above, who suggest that the social aspect of TBL underpins everything else, would agree with this suggestion (i.e. the aligning of social sustainability with human ethics and the fundamental role of ethics in human survival).

2.4 Summary

In this discussion we have moved:

- from the social dimension of the TBL as the social impact of (an organisation) doing business;
- through the interconnectivity of social, environmental, and economic on a local scale;
- to the notion that everything we do together on this planet is connected through time and space in a seamless web of interactions; and that

- through this interdependency of living system and environment or communication and consciousness our actions are bound by something we refer to as human ethics⁸ (which could be about survival).

This has brought us to the idea that the social dimension of TBL, which seeks ethical solutions to local (local in the sense that they are connected in some way to one organisation although they could be upstream or downstream and geographically dispersed) social dilemmas is striving towards something that we call social sustainability and in some way is contributing to an ethical (or more equitable?) future for living systems. Hence the discussion has moved from the social bottom line of an organisation, or workplace, into the notion of *social sustainability* and society as a whole because all of society is interlinked.

3. Social sustainability

3.1 What is it?

Alan Black (2004) in his address to the *Effective Sustainability Education* Conference in Sydney, Australia, defined social sustainability as the extent to which social values, social identities, social relationships and social institutions can continue into the future. This raises the question of time scales: how long do social systems need to continue into the future to be called *sustained*? Or are they always *sustained for x number of years* (in which case who's counting?). There are social organisations that last a lifetime and those that are sustained over the rise and fall of many lifetimes; rituals, arts and stories that carry a culture and bind a social group can continue over generations. Membership may change, wax and wane, but, like my old broom that's had four new handles and six new heads, the social system goes on. (This would bear out Luhmann's argument that the social system cannot be the actors, they come and go, they are part of the environment, it is *communication* that is sustained, that goes on manufacturing and transforming itself, and is therefore the *social system*.) But how can we call any social system a *sustainable system* when it is disappearing into an unknown future (and how do we know the future will want a system that seems like a good idea now?).

Furthermore, although in some respects Black's definition echoes the oft-quoted sustainability definition of "development that meets the needs of the present world without compromising the ability of future generations to meet their own needs" (UNWCED, 1987) it makes no judgments about the type of social system that is sustained or its impact on future generations. It leaves room for social upheaval: if current social norms are not sustainable over the long term, because say, they are unjust, they will be overturned (e.g. if social relationships are based on a class system and at some time it is overthrown then it wasn't socially sustainable in the long term). This implies a striving for social balance, a kind of social equilibrium maybe, and the notion of equity where no one group is living at the expense of another (the lifestyle of that particular group wouldn't be socially sustainable, because at some time there would be a reshuffle of power, bloody or otherwise, and a realignment of resources). Someone would have overstepped the mark living at the expense of others. As a recent UK government report points out, "A world

⁸ We have not attempted to problematise the notion of *ethics* in this paper however our attention has been drawn to Churchman, who advocates what he calls, whole system ethics, regarding the traditional view of ethics (i.e. pertaining to the individual) as inadequate to deal with the complex and irreversible environmental effects of say, greenhouse gas emissions that threaten the survival of the whole global eco-system (see Ulrich, 2002). The general notion of human ethics has also been problematised by Córdoba and Midgley (2003) who argue that in practice there are always implicit or explicit boundaries to the extension of human concern for others, thus creating "insiders" and "outsiders". Therefore in systems practice, they suggest, there is a need to explore the boundaries of concern and justify cut-off points that come to people's attention.

disfigured by poverty and inequality is unsustainable”⁹ (HM Government, 2005:13), implying that ‘someone’ should do something about it. However, in practice, Córdoba and Midgley (2003) suggest that there are always implicit or explicit boundaries to the extension of human concern for others. Also we cannot escape our history and what one group may see as overstepping the mark another may see as their inalienable right. One group can, and history has shown that they will, cause the complete annihilation of another if they do not find ways to ‘fit’ (Wright, 2005). As Maturana and Varela (1987) suggest, if they cannot find ways to fit they will ‘separate’ or ‘disintegrate’. But bringing about the ‘disintegration’ of one group, as Wright (2005) points out, can be about the survival of another. Social sustainability is not an innocent concept. Gray and Milne (2004:77) discuss the political minefield of social sustainability, suggesting that it “rests on nothing less than interpretations and explanations of the relationships between modern capitalist activity and social justice – the probability of a consensus on this area” they say, “seems slim, indeed”. Others who may or may not operate in a modern capitalist society may say that social sustainability rests on ethics, human relationships and survival of kin, local, and ultimately global community. Which looks as though we, who are lucky enough to have communication systems that allow us to live to some extent in a global community, cannot escape an obligation to act to find ways for social systems to fit together. However, as in many other political dilemmas throughout history the danger lies in creating insiders and outsiders (Córdoba & Midgley, 2003; Ulrich, 1983; Midgley, 2000).

Thus social sustainability is a restless concept, it cannot escape the messiness of human life on earth. It implies interrelationships and interdependencies built on communication over time; local or global communities in constant struggle towards living together without exploitation in an ever-changing world. On a small scale this could be about sharing services and paying for those services (where those more able may pay for services enjoyed equally by those less able to pay, such as through taxes to pay for social infrastructure) or in providing different but essential services according to our abilities, to maintain the functioning of, say, a sport or social club. On a larger scale however since all communities are interdependent and ultimately form one global social system the sustainability of one community (of geography or interest) ultimately affects and is affected by that of others. To achieve social sustainability, it seems, would be to achieve lasting global harmony, and not just between social systems but also between social systems and their environments. Striving for a new utopia! Something that Luhmann (1997) cautions us about looking for because, he says, it can only lead to new disappointments.

Perhaps then, rather than a meaningless quest for a utopian social sustainability grounded in say, well-being, it is better to settle for the struggle itself and the constant learning that this implies. Perhaps our focus should be on the “sustainable quest for systems of inquiry” (Bawden, 1997:3); sustainability-as-process, learning to manage in a shifting world (Cox, MacLeod & Shulman, 1997) as we living systems in communication with ourselves in reflection (Schön, 1979, 1983) and others in discussion find novel ways to deal with the tensions created by ethical dilemmas and competing demands. Perhaps it is sufficient to *strive towards* social sustainability which implies a framework in which to consider the likely issues embedded in our actions.

3.2 Summary

This section of the discussion has suggested some problems inherent in the definition of social sustainability. A god’s eye view is implied in the idea that someone is counting and judging, we cannot know for example:

⁹ “over a billion people live on less than a dollar a day, more than 800 million are malnourished, and over two and a half billion lack access to adequate sanitation.” (HM Government, 2005:13)

- how long something must persist for it to be called ‘sustainable’;
- if social sustainability connotes an ethical position based on principles of equity, whose notion of ‘equity’ should prevail and be sustained; or
- whether an identified social system, pronounced ‘sustainable’ today will ‘fit’ in a future world.

We are *of* the system and cannot take an outside point of view. Instead we can ask from the messiness of our relationships:

- if social sustainability is something utopian and unattainable like lasting global harmony should we shift the focus of our debate to something attainable like a sustainable process of learning as we communicate as living systems in our environment over time¹⁰; and
- how long can this (process, activity etc) be sustained; what are the likely issues to arise from this activity/behaviour – locally, globally, now, and in the future?

Having looked at the social bottom line as part of the wider concept of social sustainability and discussed the possible meaning of social sustainability, the following section explores current approaches to the social bottom line and sustainability. It briefly discusses global and local work on social indicators. It picks up the term ‘community’ and looks at various ways of conceptualising ‘community’ that are used in the broader literature of social sustainability.

4. Current approaches to the social bottom line and social sustainability

The *social bottom line* is part of the general sustainability debate. It is accounted for in the workplace by the use of indicators. The Australian Federal Government’s Department of Family and Community Services’ (2003) draft document *Triple Bottom Line Reporting in Australia: A practitioners’ guide to reporting against social indicators* and the Global Reporting Initiative’s (2002) *Sustainability Reporting Guidelines*, address social issues in the workplace (see appendix 1 for a list of sample social indicators from a range of sources) providing an outline for a social audit. They examine for example employment, workplace relations, discrimination, working hours and conditions, OH&S statistics, taxation, and skill levels, many of which were raised by the round table discussants above. All of these apply to the immediate workplace, they are part of a social audit, and are important in assisting organisations to address inequities.

Another body of knowledge expands this audit approach to one that accounts for all the upstream impacts of our goods and services. It includes the Global Footprint Network that converts our impact into the number of ‘global hectares’ needed to sustain our lifestyle; and ISA’s input output analysis that accounts for the full supply chain across a whole suite of indicators (Foran et al, 2005). Some of those who attended the workshop that began this paper brought with them expertise in developing and applying these methodologies.

A different body of knowledge contributed to the frame of reference of other members of the workshop group. It is part of the broader social sustainability debate that looks at social groups inside and outside the workplace and draws on social welfare for its frameworks. It is underpinned by a particular notion of ‘community’.

¹⁰ This may, of course, be more akin to the Little Prince commanding the sun to rise in the morning since living systems have always learned –that’s how they/we go on living (Maturana et al, 1987).

4.1 Community work or social capital

Most definitions of ‘community’ include reference to “social interaction within a geographic area and having goals or norms in common” (Black & Hughes, 2001:1). Today the geographic area can be expanded to include communities of interest that could be spread across the globe. In some areas however, the term *community* has come to refer to disadvantage, deficiencies and needs; community work can sometimes be synonymous with social/welfare work, which implies an outside agency fixing up problems. This view of community is a construct that supports a vast social/political welfare infrastructure and an equally thriving cultural counter weight of response. The infrastructure supports government departments, non-government organisations and educational institutions; the response can be from the media, others in society who believe this is wasted tax payer dollars, or members of such communities who may develop intricate strategies to baulk the system. It is not a ‘natural’ state of affairs (McNight, & Kretzmann, 1996). It has been constructed over time by various societies for social, cultural and political purposes.

Over the past couple of decades an alternative construct has been developing. This tends to see the capacity of communities to deal with their own problems (usually problems associated with poverty). “That alternative path, very simply, leads toward the development of policies and activities based on the capacities, skills and assets of lower income people and their neighbourhoods” (McNight, & Kretzmann, 1993:4).

Working with economically poor communities is now more likely to be seen in terms of building *community capacity*; or building *resilience* which is the capacity of people or communities to recover from adversity¹¹ or in terms of *community strength*. Black and Hughes (2001:7) offer a definition of *community strength* as “the extent to which resources and processes within a community maintain and enhance both individual and collective wellbeing in ways consistent with the principles of equity, comprehensiveness, participation, self-reliance and social responsibility”. Of course the extent to which poor communities are able to organise themselves, or be organised by others, and the consequences of that organisation, may depend on the local and national political systems to which the community belong (Ochoa-Arias, 1998, 2004). Ochoa-Arias (2004) argues that even when there are strong attempts to launch a participative community empowerment initiative it can be thwarted and redirected by neo-liberal forces.

Another term associated with work in relief of poverty is *social capital*, used by Robert Putnam (1993; 2000) as a focus for research and policy discussion and picked up by The World Bank in its exploration of “poverty alleviation and sustainable human and economic development”. The World Bank uses the term to refer to “the norms and networks that enable collective action”¹². It argues that “increasing evidence shows that social cohesion is critical for societies to prosper economically and for development to be sustainable”¹³.

The central premise of *social capital* is that social networks¹⁴ have value; who we know, and the inclination to do things for each other, that arises from knowing each other, is valuable to individuals and groups. This value has been recognised by business and industry in what they

¹¹ A resilient community is one that “takes intentional actions to enhance the personal and collective capacity of its citizens and institutions to respond to, and influence the course of social and economic change”. The Community Resilience Manual, developed by the Community for Community Enterprise in Canada

http://www.communitybuilders.nsw.gov.au/getting_started/needs/canadian_resil.html NSW Gov (18/02/05) The Premier's Department of New South Wales (Australia) coordinates this site as a joint government and community project

¹² <http://www1.worldbank.org/prem/poverty/scapital/home.htm> (retrieved from the internet 18/02/05)

¹³ http://www.infed.org/biblio/social_capital.htm (retrieved from the internet 18/02/05)

¹⁴ <http://www.bowlingalone.com/socialcapital.php3> (retrieved from the internet 18/02/05)

refer to as *relational capital* which, according to Ordóñez (2001, 2003), encompasses not only customer relationships but also the value of relationships with shareholders, governments, and strategic alliances. It is not surprising then that the notion of social capital is regarded as the most commonly proposed framework for addressing social sustainability (Lehtonen, 2004). In his exploration of *social capital* as a basis for examining the environmental-social interface, Lehtonen looks at the three levels of social networks proposed by Woolcock (2001):

Bonding: with family, neighbours and close friends

Bridging: with a wider network of distant friends, associates and colleagues

Linking: with formal institutions, government and business.

He says that this framework has been useful for examining determinants of social capital such as age, education, values, living area; and outcomes of social capital like individual or public well-being. Lehtonen, reports the view, however, that there are two main difficulties with use of *social capital* as an analytical tool. The first is that it is too broad and vague and the second is that its vagueness “renders the measurement and the design of suitable indicators difficult” (2004:206).

Accumulation of social capital may result in personal well-being which seems to have taken over from *human happiness* as the human condition to be strived for. However Luhmann dismisses *human happiness* or *similarities of living conditions*¹⁵ as organising principles for the examination of social systems. He says “[O]ne cannot define the concept of society by one of its possible realizations. If one restricts the concept to particular aspects of modern society, the temptation becomes irresistible, to include in the concept, ideological or normative assumptions such as human happiness, solidarity, similarity of living conditions, or communal integration.” (1997:3).

Social capital has proved a useful tool for understanding the flow of resources and influence around and through groups in society, however for an understanding of society through which to examine social sustainability something more fundamental may be useful. Luhmann (1997) believes that we should drop the search for a good or better society and instead ask how a living system, bumping up against communication, can change its mind set (way of thinking, world view). Our search for happiness or solidarity (or, presumably, well-being) as an ideal has led to approaches such as those described above that inevitably lead to insiders and outsiders and a regional concept of society as a frame for improvements. Rather, Luhmann suggests, we should see the problem as one of complexity; we are living in a global system and we should start from a concept of world society.

4.2 Summary

- In the broader community social sustainability draws on the discourse of social welfare and is often viewed through a social capital framework;
- Social capital may allow us to accrue well-being but Luhmann suggests we cannot examine social systems through one of society’s possible realisations [e.g. well-being] which is just one of many culturally defined constructs;
- Instead we should ask questions about how living systems are able to make profound changes in their world-view; and
- To do this we need to begin with a global perspective.

¹⁵ Presumably ‘well-being’ would fit here too.

In the next section we examine some alternatives to a social welfare approach to indicators of social sustainability.

5. Indicators

Led by the Global Reporting Initiative workplace indicators provide a useful way to deal with onsite issues of social sustainability in an audit framework. However if we want to reflect the notion of *sustainable system* as an integrated web of connections through time and space ultimately linking everything we do then we need to look further than an onsite audit. Starting from a concept of world society can lead us to big picture indicators such as the Ecological Footprint; delving into the complexity points to finer detail and steps along the way. Both of which seem to us to be important.

The notion of beginning with a view of world society *and* seeing the problem as one of complexity seems to encapsulate the problems associated with finding suitable TBL indicators, be it in an environmental, economic or social framework. The Natural Step (TNS) addresses this dilemma through what they term “simplicity without reduction” (Broman et al, 2000). TNS seeks first to understand the principles that define a system, what they call ‘first-order principles’, before examining the complexity of the system’s details. One of the advantages of this approach, they say, is that it is easier for people to agree on and share first-order principles, providing common ground on which to build a more detailed model. With this in mind TNS has developed a set of four guiding principles. For society to be sustainable, they say, the ecosphere must not be systematically subject to:

- *Increasing concentrations of substances from the earth’s crust;*
- *Increasing concentrations of substances produced by society; and*
- *Impoverished physical manipulation or over-harvesting.*

To these three environmental principles they add:

- *For society to be sustainable, resources must be used efficiently and fairly to meet basic human needs worldwide. (Azar et al, 1996; Broman et al, 2000).*

Using these principles as a guide TNS has worked with organisations to devise detailed indicators appropriate to particular needs. TNS has also worked with The Global Footprint Network to map the footprint as an indicator against TNS principles, particularly against principles one to three (Holmberg et al, 1999).

5.1 Endpoint and midpoint

Taking a world view as TNS suggests, requires in the first instance big picture, or *endpoint*, indicators. For example, the ecological footprint which rolls up a great deal of complexity into a single world-view indicator, tells you how much of the planet you are taking up through your life-style. In a social context *life-span* or *loss of life* could be used as endpoint indicators. The term *endpoint* refers to aggregate measures at the end of one, or several converging impact pathways. An endpoint indicator requires painstaking data collection, and complex modeling and computation. Apart from agreeing on where the endpoint occurs it requires someone to decide what data are relevant and what events contributed to the impact (for discussion of midpoint and endpoint indicators see Lenzen, 2005).

On the other hand retaining the complexity that Luhmann thinks important requires a range of what are known as midpoint indicators. Midpoint indicators can be observed somewhere along the chain of impacts, for example, rising sea level or dislocation of peoples. Debate rages around

which are more useful, endpoint or midpoint. Many think that endpoint indicators are easier for people to understand (Heijungs et al., 2003). The ecological footprint metaphor, for example, has had a powerful impact. However decision making at midpoints has advantages because it allows for more of the complexity to be examined; instead of providing a few aggregated numbers, the more multi-faceted midpoint information reveals the multi-dimensionality of the problem and can suggest a range of areas where action might be taken. Decision making based on indicators is always going to be contentious because endpoints are too uncertain to allow a decision to be made with reasonable confidence, and midpoint information is complex, revealing competing issues that need to be balanced. People will always have to make decisions and decision makers will always belong to some social system or other and make those decisions out of a particular life history.

Such decision-making can often rest on quantitative measures which are usually thought to be objective and reliable. Yet such measures come to us embedded in a particular social system that itself influences our actions. Not only that, but many believe that our decisions, and hence our actions, are ultimately emotion based (Lutz & White, 1986; Kovecses, 1990; Plutchik, 1994; Wimmer, 1995; Damasio, 1996; Freeman & Núñez, 1999; Hardcastle, 1999). How we feel about the sources of data, how much we trust the people and systems that produce the data, and how they fit with our beliefs, can determine what we do. Metaphors, like *Ecological Footprint* are important, acting at an emotional level they can change what and how we communicate (Krippendorff, 1993; Lakoff, 1993). Good numbers and powerful metaphors are part of the mix, their influence may depend on how well they fit with our beliefs and prejudices, how we feel about the source, what story we can tell about them, and how they grab the imagination.

5.2 Endpoint measures and powerful metaphors

Environmental sustainability has the *Ecological Footprint*¹⁶. The power of the metaphor lies in its instant recognisability. Through Western eyes it has connotations of, for example, 'dirty footprints'. Leaving a footprint has overtones of spoiling something or undoing someone's good work. It's also easy to see when a footprint overhangs its allotted space and spills over the end of the world into space, or intrudes into someone else's 'garden'. In exchange for this powerful metaphor that turns our environmental impact on the world into used up hectares of the earth itself we are prepared to sacrifice some inaccuracies in its calculation (although it has always been open to a refining process see Lenzen & Murray, 2001; Lenzen and Murray 2003), particularly when the results seem to accord with our expectations. Its usefulness as a political tool providing startling comparisons and benchmarks has in the past outweighed its crudeness as a measure. More recently, with the inclusion of input-output analysis, the precision and usefulness of the tool is rapidly expanding (e.g. Wiedmann et al, 2005).

But what metaphor, and endpoint indicator, can we find for our social impact on the world? One that might pick up where the ecological footprint (EF) has left off and address aspects of TNS principle four (e.g. the fulfillment of basic human needs, not addressed by the EF)? And what do we hold in common that could be expressed in terms of some people using up more than their fair share at the expense of others? What, at some fundamental level integrates the social, environmental and economic and does so in a way that acknowledges the interconnectedness of life on earth, past present and future. To address this we need to peel back the layers of social constructs discussed above and look for some simple, universal necessities.

¹⁶ For a discussion of the contested nature of the ecological footprint see: Levett 1998; van den Bergh and Verbruggen 1999; Wackernagel 1999; Opschoor 2000

Let's assume that, once born, the general aim is to spend as much time here on earth as possible (within the belief systems of the culture to which we belong). If life, at its simplest, is passing the time between being born and dying then after providing for food, water, shelter, health and safety, everything else is (a) pass-time. Everyone on the planet has passing of time in common (though some have more time to pass in total than others because some live longer- for various reasons). However, as on the island of Tuvalu where the living is easy but the web of connections to the rest of the world is apparent in the rising sea level, we cannot pass the time of our lives for ever in isolation from the web of global social, economic and environmental connections. At some stage the activities of the rest of the world will catch up with us. As the UK publication *Securing the Future: Delivering UK Sustainable Development* (HM Government, 2005:140) states: "We have created a relatively good quality of life in this country [i.e. the UK] for most of us but we now realise that this may have been at the expense of communities elsewhere in the world. Rich and poor worlds cannot co-exist without dramatic consequences. In 2000, states facing stability challenges contained just over 1.2 billion people living on less than one dollar a day, and 65 million of the 114 million children of primary school age who did not attend school".

Like it or not we are connected (see Briguglio, 1997, for a discussion of the economic vulnerability of small island developing states). Which leads to the next assumption: that those groups in society who spend considerably more than the average time on earth, and in doing so, wittingly or unwittingly, diminish the time that others have to spend, could be said to be acting unfairly. It could be argued that our instinct for survival means that we will take every opportunity to enhance our chance at longevity. However the discussion above of living systems and their environment suggests there is a biological base for human ethics: that we can and do care about the survival of other living systems albeit often at a tribal rather than global level (the trick may be to create a global tribe).

So: the *Tuvalu Test* asks how much time, on average, do we have to pass; then, how much of our time do we have to pass in providing food, water, shelter, health and safety (i.e. the basics of Maslow's hierarchy of needs; or our basic human needs suggested by Azar et al (1996) which include sanitation and education) and how much do we have left for pass-time¹⁷ (which includes everything we do after the provision of the basic necessities of life). Then it asks – but how much of the pass-time of others (i.e. engagement in anything above the necessities of life such as: over-working; over-eating; over-provision of dwelling space; shopping as a leisure activity) makes trouble for some (like rising sea levels; dangerous work conditions; depletion of natural resources) and impinges on the time we/they have to pass (either in terms of life-span¹⁸ or time for pass-time activities other than providing for necessities of life). Or conversely, how much of our pass-time impinges negatively on the lives of others. How does our demand for cheap chicken meals, for example, affect the amount of pass-time Mexican chicken factory workers have (e.g. as Monbiot (2005) says, "the consequences of our gluttony are visited on others"). As

¹⁷ We recognize that the differentiation of work and leisure is a cultural construct, implying that leisure is not-working, hence the use of *basic necessities* and *pass-time*. However, passing most of one's life-time in attending to life's necessities is considered, in some cultures a normal and healthy thing to do, and there are others where the basic necessities are not bought with money earned from other work. These cases are probably diminishing in number because the rest of us are impinging on that lifestyle.

¹⁸ E.g. average life expectancy at birth in the UK is currently 78 years whilst the global average is 65 years, www.who.int/en/

a starting point we could take the world average life span and compare with it that of individuals and groups.

Thus we could add a fifth principle to the TNS suite:

For society to be sustainable people's life-time and pass-time must not be systematically appropriated by others.

And as a framework in which to consider the likely issues embedded in our actions we offer the question:

what shall we do today to optimize our chances of reaching a fairer allocation of life-time and subsequently of pass-time?

This question could be added to the suite of strategic questions that an organization might consider for planning towards sustainability (Holmberg et al, 1999).

5.3 Midpoint measures and mean lives

In their review of the literature linking leisure time with quality of life (QOL), Lloyd and Auld (2002:43) point out there have been various studies done that “include selected leisure attributes such as ‘amount of nonwork time’, ‘spare time activities’ and ‘access to leisure facilities’ in assessments of life quality”. These cover a wide range of social groups including black urban youth in South Africa, urban Iranian women and people with disabilities. In their study of leisure and quality of life Lloyd and Auld (2002:62) found that “mere proliferation of leisure resources while increasing leisure opportunities, does not improve overall QOL”. The best predictor, they found was “frequency of visiting and going out with friends and attending clubs and organizations” (p63). Thus time for frequent leisure activities underpins what they suggest is a good quality of life. If *quality of life* (indicating *well-being*¹⁹) is our current yard-stick by which to judge society then time for social interaction may be an important midpoint indicator of social sustainability for the global tribe.

One, albeit fairly crude, way of measuring available pass-time to address the first part of the *Tuvalu Test* could be achieved by taking the cost of living, dividing by the average hourly rate of pay, finding how long we have to work to cover the cost of living and then how many hours of the day are left for pass-time? What might this show about for example, who has time for spending pass-time in earning more money (to spend) that is, trading immediate time for stored time (in the form of the storage device money, which can then be inherited by descendants as stored time); who has time for social and cultural activities, for the sheer luxury of paying full attention to beauty (in all its spiritual and artistic manifestations) including spending time with family and friends (that some might refer to as ‘bonding’ or building ‘social capital’) and who is too busy making ends meet? Who has time for education and is therefore more likely to be able to earn the cost of living in a smaller number of hours? Who has more time for participation and dialogue building the social cohesion recognized as important by the World Bank? If we complemented this, by addressing the second part of the Tuvalu test (how much of the pastime of others makes trouble for some) with local indicators like life expectancy and a measure of quality of life then maybe we could compare the allocation of pass-time between individuals, groups and nations. This would be a hybrid analysis recognizing the importance of local

¹⁹ Quality of Life indicators are being developed to gather statistics on well-being: <http://www.calvert-henderson.com/index.htm>

considerations emerging from conditions bound by the local community's history, but within a global framework.

6. Conclusion

Systems theory suggests that we live in an inseparable web of relationships. Maturana and Verala (1987) suggest we create the world by living in it and Lumann (1997) says that communication becomes structurally coupled with the consciousness of individuals to produce the conditions necessary for the emergence and evolution of social order. Thus communication among and between communities as we find ways to 'fit' with each other and our environment (which includes other living systems) is the essence of our search for sustainability.

Environmental reporting is already being addressed in a systems framework. In discussion with organisations appropriate environmental indicators have been developed to address TNS principles one to three. The Global Footprint Network has identified areas of TNS principles covered by footprint methodology and gaps that need to be addressed. Gaps are particularly evident in the fourth principle, which deals with social issues.

Luhmann suggests that social systems are best addressed in a global framework. And TNS advises beginning analysis at a level where complexity is low, where it is easier for people to reach agreement and achieve a common mental model. Such an approach, they say, respects the complexity of a system without losing site of the detail – what they refer to as 'simplicity without reduction'.

Thus time for living, or life-time, can provide a simple, global framework in which many could probably find agreement. It would be difficult to argue that some groups or individuals should be entitled to a much longer life span than others. Once agreed that all should be entitled to a similar life span then questions about the use of that (life) time follow. First, how much of that life-time is used up in earning the cost of living; and how much is left for pass-time. Once these questions have been addressed room is made for discussion of *community* and the various frameworks that have been developed, such as *well-being*, for expressing satisfaction with and equity within and between *communities*. Such an approach will satisfy our commitment to the workshop participants to search for a framework that unifies, rather than divides us.

We have no way of knowing what a sustainable social system might be. However the above discussion indicates that, guided by the ethics implied in acceptance of responsibility embedded in a systems perspective (Fell & Russell, 1993; von Foerster, 1992) we can help effect changes that will bring about conditions supportive of a more global, less tribal, social system. We can apply the Tuvalu test, use powerful metaphors and good numbers to help promote: global communication systems so that all can participate in multiple conversations; the sharing of our planet's resources to satisfy everyone's basic needs; the need for time to communicate with family and friends for health and well-being, and with family, friends and the rest of the world for education and learning.

We're all in this together, as we bump up against each other and the multiple conversations that make up our myriad social systems we will grow and change and in so doing we will change the conversations and the environment. We have only our learning to ensure that the broom survives its infinite new handles and equally infinite new heads. This paper is offered as a contribution to the conversation.

Acknowledgement

Writing of this paper was supported in part by a grant from the New South Wales Department of Environment and Conservation's Environmental Trust.

The writers would also like to acknowledge the generosity of the reviewers of an earlier draft of this paper. Their insights and suggestions for further reading have been invaluable and while not all the points raised by the reviewers have been addressed in this paper we hope to be able to take some of them up in future work.

DRAFT

References

- Azar, C., Holmberg, J. & Lindgren, K. (1996), Socio-ecological indicators for sustainability. *Ecological Economics* 18, 89-112.
- Ballet, J., Dubois, J.-L., Mahieu, F.-R. (2003). Le developpement socialement durable: un moyen d'integrer capacites et durabilite. Paper presented at the Third Conference on the Capability Approach, University of Pavia, 6-9 September, 2003.
- Bawden, R. (1997). Learning to Persist. In *Systems for Sustainability: People, Organizations, and Environments*. F. A. Stowell, R.L. Ison, R. Armson, J. Holloway, S. Jackson, & S. McRobb (Eds). Plenum Press, New York, USA, pp1-5.
- BITC (Business in the Community) (2005). *Corporate Responsibility Index 2005* http://www.bitc.org.uk/programmes/key_initiatives/corporate_responsibility_index/ retrieved from the web 2/01/06
- Black, A. (2004). The Quest for Sustainable, Healthy Communities. Presentation to the *Effective Sustainability Education Conference* 19th Feb, NSW Council on Environmental Education, UNSW, Sydney Feb 18-20.
- Black, A. & Hughes, P. (2001). What is meant by 'community strength'? Paper presented at the *TASA 2001 Conference*, The University of Sydney, 13-15 December.
- Boele, R, Fabig, H. & Wheeler, D. (2001). Shell, Nigeria and the Ogoni - A study in Unsustainable Development II - Corporate Social Responsibility and 'Stakeholder Management' versus a Rights-Based Approach to Sustainable Development, *Journal of Sustainable Development*, Volume 9, Number 3, Pages 121-135.
- Bogdanov, A.A. (1913-1917). *Bogdanov's Tektology*. 1996 ed. Dudley, P. (ed.). Centre for Systems Studies Press, Hull.
- Briguglio, L. (1997). Small Island Developing States and their Economic Vulnerability. In *Sustainability Indicators*. M. Bedrich & S. Billharz (Eds). John Wiley & Sons, Chichester, UK, pp210-215.
- Broman, G., Holmberg, J. & Robert, K.-H. (2000). Simplicity Without Reduction – Thinking Upstream Towards the Sustainable Society. *Interfaces: International Journal of the Institute for Operations Research and the Management Sciences*. 30(3).
- Commonwealth Department of Family and Community Services (2003). *Triple Bottom Line Reporting in Australia: A practitioners' guide to reporting against social indicators*. DRAFT-IN-DISCUSSION, May 2003
- Córdoba J and Midgley G (2003). Addressing organisational and societal concerns: An application of critical systems thinking to information systems planning in Colombia. In: Cano J (ed). *Critical Reflections on Information Systems: A Systemic Approach*. Idea Group Publishing: Hershey PA, pp. 159-208.
- Cox, E. (2003). Trustworthiness and sustainability - why become involved in the third bottom line. *2003 IULA-ASPAC (International Union of Local Authorities - Asia and Pacific*

Section) *Inaugural Congress*. University of Technology, Sydney, April 9.

- Cox, P.G., MacLeod, N.D. & Shulman, A.D. (1997). Putting Sustainability into Practice in Agricultural Research for Development. In *Systems for Sustainability: People, Organizations, and Environments*. F. A. Stowell, R.L. Ison, R. Armson, J. Holloway, S. Jackson, & S. McRobb (Eds). Plenum Press, New York, USA, pp33-38.
- Damasio, A.R. (1996). *Descartes' Error: Emotion, Reason and the Human Brain*. London: Papermac.
- Fabig, H. & Boele, R. (2003). Taking the Business and Human Rights Agenda to the Limit? - The Body Shop and Amnesty International "Make Your Mark" Campaign, in: Sullivan, Rory (ed), *Business and Human Rights - Dilemmas and Solutions*, Greenleaf Publishing, Sheffield, pp. 272-284
- Foran, B., Lenzen, M. & Dey, C. (2004). *Balancing Act: A Triple Bottom Line Analysis of the Australian Economy*. Department of Environment and Heritage, Australian Government.
- Freeman, W.J. & Núñez, R. (1999). Restoring Action, Intention & Emotion to Cognition. *Journal of Consciousness Studies*, 6(11-12), ix-xix.
- Gallopin, G.C. (1997). Indicators and Their Use: Information for Decision-making. In *Sustainability Indicators*. M. Bedrich & S. Billharz (Eds). John Wiley & Sons, Chichester, UK, pp13-27.
- Global Footprint Network (2005). *Ecological Footprint: Overview*. http://www.footprintnetwork.org/gfn_sub.php?content=footprint_overview retrieved from the web 4/01/06.
- Global Reporting Initiative (2002). *Sustainability Reporting Guidelines*. Global Reporting Initiative interim secretariat, Boston, USA.
- Gray, R. & Milne, M. (2004). Towards Reporting on the Triple Bottom Line. In *The Triple Bottom Line: Does it all add up?* A. Henriques & J. Richardson (Eds). Earthscan, London, UK, pp70-80
- Hardcastle, V.G. (1999). It's O.K. to be Complicated: The case of emotion. *Journal of Consciousness Studies*, 6(11-12), 237-250.
- Heijungs, R., Goedkoop, M.J., Struijs, J., Sevenster, M. & Huppes, G. (2003). Towards a life cycle impact assessment method which comprises category indicators at the midpoint and the endpoint level. <http://www.pre.r.1/download/Recipe%20phase1%20final.pdf> . Amersfoort, Netherlands, PRÉ Consultants.
- HM Government. (2005). *Securing the Future: Delivering UK Sustainable Development*. Strategy Presented to Parliament by the Secretary of State for Environment, Food and Rural Affairs by Command of Her Majesty, March 2005. HMSO: St Clements House, 2-16 Colegate, Norwich.

- Holmberg, J., Lundqvist, U., Robert, K.-H. & Wackernagel, M. (1999). The Ecological Footprint from a Systems Perspective of Sustainability. *International Journal of Sustainable Development and World Ecology* 6, 17-33.
- Integrated Sustainability Analysis (ISA) (2006). *ISA Information sheet 6: ISA indicator suite*. Retrieved from the web 2/01/06. <http://www.isa.org.usyd.edu.au/research/nea.shtml>
- Kovecses, Z. (1990). *Emotion Concepts*. New York: Springer-Verlag.
- Krippendorff, K. (1993). Major Metaphors of Communication and some Constructivist Reflections on their Use. *Cybernetics & Human Knowing*, 2(1), 3-25.
- Lakoff, G. (1993). The contemporary theory of metaphor. In A. Ortony (Ed.), *Metaphor and Thought* (2nd ed., pp. 202-251). Cambridge: Cambridge University Press.
- Longstaff, S. (2000). Corporate Social Responsibility. *City Ethics* (now *Living Ethics*), issue 40, winter.
- Lutz, C. & White, G.M. (1986). The Anthropology of Emotions. *Annual Review of Anthropology* 15, 405-36.
- Kretzmann, J.P. & McKnight, J.L. (1993). *Building Communities from the Inside Out: A Path Toward Finding and Mobilizing a Community's Assets*. Evanston, IL, Institute for Policy Research.
- Lehtonen, M. (2004). The environmental-social interface of sustainable development: capabilities, social capital, institutions. *Ecological Economics* 49 (2004) 199-214. www.elsevier.com/locate/ecolecon
- Lenzen, M. (2005). Uncertainty in Impact and Externality Assessments: Implications for Decision-Making. *International Journal of Life Cycle Analysis*, 11.1-11.2, pp1-11.
- Lenzen, M. & Murray, S. A. (2001). A modified ecological footprint method and its application to Australia, *Ecological Economics* 37 (2001) 229-255.
- Lenzen, M. and Murray S.A. (2003). *The ecological footprint - issues and trends*. ISA Research Paper 01-03, Internet site [http://www.isa.org.usyd.edu.au/publications/documents/Ecological Footprint Issues and Trends.pdf](http://www.isa.org.usyd.edu.au/publications/documents/Ecological_Footprint_Issues_and_Trends.pdf), ISA The University of Sydney, Sydney, Australia
- Levett, R. (1998). Footprinting: a great step forward, but tread carefully. *Local Environment* 3(1), 67-74.
- Lloyd, K.M. & Auld, C.J. (2002). The Role of Leisure in Determining Quality of Life: Issues of Content and Measurement. *Social Indicators Research* 57 (2002) 43-71.
- Lumann, N. (1995). *Social Systems*. Stanford University Press, Stanford
- Lumann, N. (1997). Globalization or World Society: How to Conceive of Modern Society? *International Review of Sociology*, March, v 7 issue 1 p67 (13 pages) <http://www.libfl.ru?Luhmann?Luhmann2.html> retrieved from the web 21/01/05

- Maturana, H.R. (2002). Autopoiesis, Structural Coupling and Cognition. *Cybernetics and Human Knowing*, 9(3-4), 5-34.
- Maturana, H. (1988). Reality: The search for objectivity or the quest for a compelling argument. *Irish Journal of Psychology*, 9, 25-82.
- Maturana, H. R. & Varela, F. J. (1987). *The Tree of Knowledge: The Biological Roots of Human Understanding*. New Science Library, London: Shambhala.
- McNight, J. L. & Kretzmann, J.P. (1996). Mapping Community Capacity. Evanston, IL: Center for Urban Affairs and Policy Research, Northwestern University, 1990
<http://www.northwestern.edu/ipr/publications/community/mcc.html>
- Midgley, G. (2000). *Systemic Intervention: Philosophy, Methodology, and Practice*. Kluwer/Plenum, New York.
- Monaghan, P. (2004). Put Up or Shut Up. In *The Triple Bottom Line: Does it all add up?* A. Henriques & J. Richardson (Eds). Earthscan, London, UK, pp142-154
- Monbiot, G. (2005). Mocking our Dreams. *The Guardian* 14th February. Retrieved from the web 1/04/05 <http://www.monbiot.com/archives/2005/02/15/mocking-our-dreams/>
- Oakley, R. & Buckland, I. (2004) What if Business as Usual Won't Work? In *The Triple Bottom Line: Does it all add up?* A. Henriques & J. Richardson (Eds). Earthscan, London, UK, pp131-141
- Ochoa-Arias, A.E. (2004). An interpretive systemic exploration of community action in Venezuela. In, *Community Operational Research: OR and Systems Thinking for Community Development*. Midgley, G. and Ochoa-Arias, A.E. (eds). Kluwer/Plenum, New York.
- Ochoa-Arias, A.E. (1998). An Interpretive-Systemic Framework for the Study of Community Organisations. *Systemic Practice and Action Research*. 11.(5).
- Ordóñez de Pablos, P. (2003). "Guanxi" and Relational Capital: Eastern and Western Approaches to Manage Strategic Intangible Resources. www.iacmr.org/03-065.pdf retrieved from the web 13/01/06
- Ordóñez de Pablos, P. (2001). Relevant experiences on measuring and reporting intellectual capital in European pioneering firms. In N. Bontis and C. Chong (Eds.), *World congress on intellectual capital readings*. Butterworth-Heinemann
- Opschoor, H. (2000). The ecological footprint: measuring rod or metaphor? *Ecological Economics* 32, 363-365.
- Plutchik, R. (1994). *The Psychology and Biology of Emotion*. New York: Harper Collins College Publications.
- Putnam, R. with R. Leonardi & R. Nanetti (1993). *Making Democracy Work*. Princeton University Press, Princeton.

- Putnam, R. (2000). *Bowling Alone: The Collapse and Revival of American Community*. Simon and Schuster, New York.
- Richardson, J. (2004). Accounting for Sustainability: Measuring Quantities or Enhancing Qualities? In *The Triple Bottom Line: Does it all add up?* A. Henriques & J. Richardson (Eds). Earthscan, London, UK, pp 34-44
- Schön, D. (1979). Generative Metaphor: A Perspective on Problem-setting in Social Policy. In A. Ortony (Ed.), *Metaphor and Thought* (pp. 254-283). Cambridge: Cambridge University Press.
- Schön, D. (1983). *The Reflective Practitioner: How Professionals Think in Action*. New York: Basic Books.
- Ulrich, W. (2002). Honoring C.W. Churchman: Towards Future-Responsive Management. Revised prepublication version of "Can we secure future-responsive management through systems thinking and design?" *Interfaces*, 24, No. 4, 1994, Special Section in Celebration of C.W. Churchman's 80 years, ed. by E. Koenigsberg and J.P. van Gigch, pp. 26-37.
- Ulrich, W. (1983). *Critical Heuristics of Social Planning: A New Approach to Practical Philosophy*. Haupt, Berne.
- UNWCED (1987). *Our Common Future*. (The Brundtland Report). Oxford: Oxford University Press.
- Viskovatoff, A. (1999). Foundations of Niklas Luhmann's Theory of Social Systems. *Philosophy of the Social Sciences*, Dec99, Vol. 29 Issue 4, p481, 36p
- van den Bergh, J.C.J.M. and Verbruggen H. (1999). Spatial sustainability, trade and indicators: an evaluation of the 'ecological footprint'. *Ecological Economics* 29(1), 61-72.
- von Foerster, H. (1992). Ethics and Second-Order Cybernetics. *Cybernetics and Human Knowing*, 1(1), 9-19.
- Wackernagel, M. (1999). An evaluation of the ecological footprint. *Ecological Economics* 31(3), 317-318.
- Wiedmann, T., Minx, J., Barrett, J. & Wackernagel, M. (2005). Allocating ecological footprints to final consumption categories with input-output analysis. *Ecological Economics* (in press).
- Wimmer, M. (1995). Evolutionary Roots of Emotions. *Evolution and Cognition*, 1(1), 38-50.
- Woolcock, M. (2001). The place of social capital in understanding social and economic outcomes. The contribution of Human and Social Capital to Sustained Economic Growth and Well-Being. International Symposium Report. Human Resources Development Canada (HRDC) and OECD. Chapter 5, pp65-88.
- Wright, R. (2004). *A Short History of Progress*. Melbourne, Australia: Text Publishing.

Appendix 1

A sample collection of social indicators taken from a range of frameworks, reports and indices

	Indicator	Included in:
Workplace		
<i>Employment</i>	Status (employee/non-employee) Type (full/part time) Contract (permanent/fixed term/temporary) Region/country	Core Aust draft index ²⁰ ; GRI ²¹ ; ISA
	Net employment creation and average turnover	Core Aust draft index; GRI; ISA ²²
	Employee benefits beyond those legally mandated (e.g. contributions to health care, disability, maternity, education, retirement)	Core Aust draft index; GRI
	Standard injury, lost day and absentee rates and number of work related fatalities (including sub-contractors)	Core Aust draft index; GRI
	Business size supported (\$of turnover)	ISA
	Wage and salary income generated (\$)	ISA
	Government revenue contributed (\$)	ISA
	Workloads and staffing levels	Westpac ²³
	Staff selection and contract	Westpac
	Employer of choice (employees proud to be employed by --- ---; feel they can make a contribution; feel employee is concerned for their health and safety)	BP Australia ²⁴
<i>Workplace Relations</i>	Percentage of employees represented by independent trade union or other such organization; or percentage of employees covered by collective bargaining agreements	GRI
	Policy and procedures for informing, consulting and negotiating with employees over changes in operations (restructuring)	GRI
	Provision for formal worker representation in decision making or management inc corporate governance	GRI
<i>Living our values</i>	Survey response to whether social issues are important to the future of the company	Novo Nordisk ²⁵
	Survey response to whether management demonstrates in words and action that they live the company's values	Novo Nordisk
	Supplier feedback	Westpac
	Employee ownership programs	Lafarge ²⁶
<i>Health & Safety</i>	Recording and notification of occupational accidents & diseases	GRI
	Formal joint health and safety committees (management and workers)	GRI
	Standard injury, lost day and absentee rates and number of work related fatalities (inc subcontracted workers)	Core Aust draft index; GRI
	Policies and programs on HIV/AIDS	GRI
	Compliance with ILO guidelines on OH&S management systems	GRI
	Formal agreements with trade unions or equivalent covering health and safety	GRI

²⁰ Department of Family and Community Services. *Triple Bottom Line Reporting in Australia: A practitioners' guide to reporting against social indicators*. DRAFT-IN-DISCUSSION, May 2003

²¹ Global Reporting Initiative. *Sustainability Reporting Guidelines*, 2002

²² *TBL indicators in the Sydney University /CSIRO framework*, 2003, www.isa.org.usyd.edu.au

²³ Westpac. *Pressing On: Social Impact Report 2004*

²⁴ BP Australia. *triple bottom line report*, 2000

²⁵ Novo Nordisk, *Sustainability Report: What does being there mean to you?*, 2003

²⁶ "Lafarge's responsibility is about aligning its actions with its values": Lafarge 2003 Sustainability Report

<i>Training and Education</i>	Average hours of training per year per employee by category of employee	Core Aust draft index; GRI
	Programs to support the continued employability of employees and to manage career endings	Core Aust draft index; GRI
	Policies and programs for skills management or for lifelong learning	GRI
	Expenditure on education and research	ISA
	Apprenticeships and undergraduate scholarships	Integral ²⁷ energy
<i>Diversity and Opportunity</i>	Equal opportunity policies or programs, monitoring of programs and results	Core Aust draft index; GRI
	Composition of senior management and corporate governance bodies (inc board of directors) inc male/female ratio & cultural diversity as appropriate	Core Aust draft index; GRI
	Female- male salary ratios	Westpac
<i>Strategy & Management</i>	Policies, guidelines, corporate structure, procedures to deal with all (relevant) aspects of human rights, monitoring mechanisms & results	Core Aust draft index; GRI
	How policies relate to international standards (Universal Declaration; Human Rights Conventions of the ILO)	Core Aust draft index; GRI
	Consideration of human rights impacts as part of investment and procurement decisions, including selection of suppliers/contractors	Core Aust draft index; GRI
	Policies and procedures to evaluate and address human rights performance within the supply chain and contractors, inc monitoring systems and results	GRI
	Employee training on policies and practices concerning all aspects of human rights relevant to operations.	GRI
<i>Non-discrimination</i>	Global policy and procedures programs to prevent all forms of discrimination, monitoring systems and results	GRI
<i>Indigenous rights</i>	Description of policies, guidelines and procedures to address the needs of indigenous people (in workforce and communities impacted by operation)	Core Aust draft index; GRI
	Description of jointly managed community grievance mechanism	GRI
	Share of operating revenues from the area of operations that are distributed to local communities	GRI
<i>Freedom of Association & Collective Bargaining</i>	Description of freedom of association policy and extent to which it is universally applied independent of local laws; description of procedures/programs to address the issue	Core Aust draft index; GRI
<i>Child Labour</i>	Description of policy excluding child labour as defined by the ILO convention 138 and extent to which this policy is visibly stated and applied as well as description of procedures/programs to address this issue including monitoring systems and results of monitoring	GRI
<i>Forced and compulsory labour</i>	Description of policy to prevent forced and compulsory labour and extent to which this policy is visibly stated and applied as well as description of procedures/programs to address this issue including monitoring systems	GRI
<i>Disciplinary Practices</i>	Description of appeal practices, inc human rights issues	GRI
	Description of non-retaliation policy and effective confidential employee grievance system	GRI
<i>Community</i>	Policies to manage impact on communities in areas affected by the reporting organisation's activities; procedures/programs to address the issue & monitoring	Core Aust draft index; GRI
	Policies and procedures for identifying and talking with community stakeholders	Core Aust draft index; GRI

²⁷ Integral Energy (2002), *Building a better future for all of us. Sustainability: achieving a balance between financial, environmental and social considerations.*

	Awards received relevant to social ethical and environmental performance	GRI
	Sponsorship and funding for community events	Integral Energy
<i>Bribery and Corruption</i>	Description of the policy procedures and compliance mechanisms for organizations and employees addressing bribery and corruption	GRI
<i>Political contributions</i>	Money paid to political parties and institutions that exist to fund political parties or candidates	Core Aust draft index; GRI
<i>Competition and Pricing</i>	Court decisions regarding cases pertaining to anti-trust and monopoly regulations	GRI
	Description of policy procedures and compliance mechanisms for preventing anti-competitive behaviour	GRI
<i>Customer health and safety</i>	Policies for preserving customer health and safety during use of organization's products and services; application of the policy; procedures and programs to address the issue, monitoring systems	Core Aust draft index; GRI
	Number and type of instances of non-compliance with regulations concerning customer health and safety including the penalties and fines assessed for these breaches	GRI
	Number of complaints upheld by regulatory or similar official bodies to oversee or regulate the health and safety of products and services	GRI
	Voluntary code compliance product labels or awards with respect to social and or environmental responsibility that the reporter is qualified to use	GRI
<i>Products and services</i>	Description of policy procedures management systems and compliance mechanisms related to product information and labelling	GRI
	Number and type of instances of non-compliance with regulations concerning product information and labelling	GRI
	Description of policies procedures management systems and compliance mechanisms related to customer satisfaction	GRI
	Customer charter	Westpac
	Accessibility for the disabled	GRI Westpac
<i>Advertising</i>	Description of policies procedures management systems and compliance mechanisms for adherence to standards and voluntary codes related to advertising	GRI
	Number and type of breaches of advertising and marketing regulations	GRI
<i>Respect for Privacy</i>	Description of policies procedures management systems and compliance mechanisms for consumer privacy	GRI
	Number of substantiated complaints regarding breaches of consumer privacy	GRI
	Premature death from heart disease	London ²⁸
	Average life expectancy	UK gov ²⁹
	Crime	London
	Child poverty	London
	Proportion of working-age people who live in households where no-one works	UK gov
	House price/income ratio	London
	Proportion of single elderly households experiencing fuel poverty	UK gov

²⁸ London First Sustainability Unit. A Triple Bottom Line for London: An Index of London's Sustainability 2003, <http://www.london-first.co.uk>

²⁹ Sustainable Development –the UK Government's approach. Headline Indicators 2004, <http://www.sustainable-development.gov.uk>

	Equal opportunity – ethnicity (comparative unemployment rates)	London
	Equal opportunity – gender (comparative unemployment rates)	London
	Unemployment	London
	Percentage of working age people in work	UK gov
	Education	London
	Qualification at age 19	UK gov
	Housing condition	UK gov
<i>Libraries</i>	Access to community information (website visits)	W'gong Council ³⁰
	Supply of new library materials	W'gong Council
	Public access computers	W'gong Council
	Range of services for children and youth	W'gong Council
<i>Community services</i>	Services for older people and those with disabilities and carers	W'gong Council
	Volunteering (opportunities, support, training, matching)	W'gong Council
	Community facilities	W'gong Council
	Grants to local communities	W'gong Council
	Partnerships with community, business, industry, education and government sectors	W'gong Council
	Arts: opportunities and cultural events	W'gong Council
	Respite services	W'gong Council
	Community transport	W'gong Council
Corporate Responsibility Index (St James Ethics Centre, The Sydney Morning Herald, The Age)		
	Access to justice Addressing homelessness Alcohol misuse Economic development Employee assistance program (EAP) Employee development Employee engagement Employee programs and support Accessible communications products and support for people with disabilities Financial inclusion Financial literacy Flexible working conditions Human rights Information transparency and awareness raising Internal cultural transformation Noise Social inclusion Supporting youth training and development Work life balance Workplace satisfaction	

³⁰ Wollongong City Council. Annual Report, 01/02