What is social sustainability? A clarification of concepts

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ABSTRACT

Though the concept of sustainable development originally included a clear social mandate, for two decades this human dimension has been neglected amidst abbreviated references to sustainability that have focused on bio-physical environmental issues, or been subsumed within a discourse that conflated 'development' and 'economic growth'. The widespread failure of this approach to generate meaningful change has led to renewed interest in the concept of 'social sustainability' and aspects thereof. A review of the literature suggests, however, that it is a concept in chaos, and we argue that this severely compromises its importance and utility. The purpose of this paper is to examine this diverse literature so as to clarify what might be meant by the term social sustainability and highlight different ways in which it contributes to sustainable development more generally. We present a threefold schema comprising: (a) 'development sustainability' addressing basic needs, the creation of social capital, justice and so on; (b) 'bridge sustainability' concerning changes in behaviour so as to achieve bio-physical environmental goals and; (c) 'maintenance sustainability' referring to the preservation – or what can be sustained – of socio-cultural characteristics in the face of change, and the ways in which people actively embrace or resist those changes. We use this tripartite of social sustainabilities to explore ways in which contradictions and complements between them impede or promote sustainable development, and draw upon housing in urban areas as a means of explicating these ideas.

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1. Introduction

Our Common Future (WCED, 1987), or the 'Brundtland Report' as it is commonly known, marked a profound change in our attempts to connect bio-physical environmental, social and economic policy goals. In the years since its publication, there has been a profusion of literature devoted to the general topic of sustainable development but, arguably, a blurring of focus: We now have urban sustainability, sustainable management, environmental sustainability, weak and strong sustainability, or just 'sustainability', with debates occurring within and between each. Our purpose here is not to add to this wealth of terms but to trace the evolution of a particular branch of sustainable development concerned with its social dimensions and implications – social sustainability – whilst highlighting ways in which the idea still connects with broader bio-physical environmental and economic issues and challenges. Indeed, we would argue that a better understanding of the concept's social elements is crucial in reconciling the often competing demands of the society–environment–economy tripartite.

We are also concerned that the many and varied contributions of social scientists have led to a degree of conceptual chaos and

that this compromises the term's utility. Some work conducted under the rubric of social sustainability is clearly focussed on meeting basic needs and addressing 'underdevelopment', whilst others are equally concerned about changing the deleterious behaviour of the world's affluent and the promotion of stronger environmental ethics. Other scholars seem to see social sustainability more in terms of maintaining or preserving preferred ways of living or protecting particular socio-cultural traditions. Some of these preferences – living in low-density suburbs, or insisting on access to 'traditional' fishing grounds and species, for example – are not always seen as sustainable in a bio-physical environmental sense, thus there is a great deal of potential for conflict to occur.

This concern prompted us to examine the work conducted on the social dimensions of sustainable development and summarise these varied attempts to define, organize and operationalize 'social sustainability'. First, we evaluate three different scholars' attempts to interpret the 'social sustainability' literature, but conclude that their taxonomies are difficult to apply or are incomplete. We then present our own threefold schema of social sustainabilities comprising: (a) 'development sustainability' addressing basic needs, the creation of social capital, justice, equity and so on; (b) 'bridge sustainability' concerning changes in behaviour so as to achieve bio-physical environmental goals; and (c) 'maintenance sustainability' referring to the preservation – or what can be sustained – of socio-cultural characteristics in the face of change, and the ways

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in which people actively embrace or resist those changes. At each stage we draw upon examples of housing as a means of illustrating these different social sustainabilities. Finally, we explore ways in which the contradictions and complements between each element of our tripartite impedes or promotes sustainable development more generally.

1.1. Exploring social sustainability

There have been a number of previous attempts to impose some order on the diverse range of work that alludes, in one way or another, to 'social sustainability'. We found work from three authors – Sachs (1999), Godschalk (2004) and Chiu (2002, 2003) – particularly helpful both in terms of identifying different aspects of social sustainability and connecting them to sustainable development more generally. Sachs (1999), in a discussion of 'social sustainability and whole development', identified a number of constituent elements including social homogeneity, equitable incomes and access to goods, services and employment. Sachs also highlighted the importance of 'cultural sustainability' which requires balancing externally imposed change with continuity and development from within, and a 'political sustainability' based around democracy, human rights and effective institutional control of, for example, war, the application of the precautionary principle of risk avoidance and management, and the de-commodification of science and technology. Sach's review, while useful, gives equal voice to a range of considerations within broader discussions of sustainable development and those dimensions specifically designated 'social' are not discussed in great depth.

Godschalk (2004) took quite a different approach and sought to expose ways in which various elements of social sustainability might align or, importantly, conflict. Godschalk (2004) modified Campbell's (1996) urban planning tripartite of 'resource', 'development' and 'property' conflicts by adding a 'liveability' component of social sustainability. This perspective highlighted ways in which the concerns of urban planning (economic growth, ecology and equity) can misalign, and even clash with residents' search for liveable cities. Godschalk's focus on conflict is important because it runs contrary to much of the sustainability discourse which simply assumes the concept will generate desirable outcomes for all, all of the time. This work also serves as a useful point of departure for wider discussions around social sustainability that might take place outside the urban planning field.

In a third analysis Chiu (2002, 2003) evaluated social sustainability in the context of housing in Hong Kong. She identified three types of social sustainabilities based on conceptualisations of social limits, ecological limits and equality. Although this tripartite roughly corresponds to the one we develop later in this paper, we make clearer distinctions between what Chiu calls 'social norms', 'social preconditions for [ecological] sustainable development' (see also Sachs, 1999) and 'equitable distribution of resources and opportunities'. As Chiu has described them, the social limits or social preconditions for sound bio-physical environmental management and concerns about equity tend to elide and we argue, therefore, that both of these 'echo with the principles of sustainable development defined by WCED' (Chiu, 2003, p. 223).

In summarising, Sachs, Godschalk and Chiu all identify a range of approaches to, and interpretations of, social sustainability and attempt to impose some order on the concept. Yet, their work raises as many questions as they answer: How might Sach's work be applied, and how do Godschalk's conflicts manifest beyond urban planning? Chiu's work suggests to us a need to explore the analytical implications of keeping these different types of social sustainability separate, but do they, in practice, generate different effects and/or lead to distinctly different outcomes? To address these questions we offer our own typology comprising 'develop-

ment', 'bridge' and 'maintenance' social sustainabilities. In the following sections, we provide a rationale for our typology, and identify particular studies and major debates associated with each type of social sustainability. We also use housing to illustrate how each of these social sustainabilities can be applied to a particular issue.

1.2. Development social sustainability

Many of those referring to 'social sustainability' draw upon the definition of sustainable development provided in the Brundtland Report, *Our Common Future*: 'Development that meets the needs of the present without compromising the ability of future generations to meet their own needs' (WCED, 1987, p. 40). This definition is enormously appealing because it holds the possibility of reconciling people's needs with bio-physical environmental management goals through economic development. It captures the essence of a much larger construct that attempts to address both tangible and less tangible necessities for life which, in turn, was seen to depend on reviving growth; changing the quality of growth; meeting essential needs for jobs, food, energy, water, and sanitation; ensuring a sustainable level of population; conserving and enhancing the resource base; reorienting technology and managing risk; merging the environment and economics in decision-making; and reorienting international economic relations (p. 49). The report also clearly states that 'the distribution of power and influence within society lies at the heart of most development challenges' (p. 37).

Recent scholarship has, however, highlighted ways in which practice associated with the concept has failed to substantially improve the conditions of the poor. As Marcuse has pointed out, 'To think that their present societal arrangements might be sustained – that is an unsustainable thought for the majority of the world's people' (1998, p. 103; see also Gunder, 2006). Subsequently, inter- and intra-generational equity, the distribution of power and resources, employment, education, the provision of basic infrastructure and services, freedom, justice, access to influential decision-making fora and general 'capacity-building' have all been identified as important aspects of the development paradigm (Mitlin and Satterthwaite, 1996; Basiago, 1998; Nahapiet and Ghosal, 1998; Polese and Stren, 2000; Enyedi, 2002; Chiu, 2003; Strigl, 2003; Halme et al., 2004; Hargreaves, 2004; Newell et al., 2004; Foladori, 2005; Kallstrom and Ljung, 2005; Redclift, 2005; Crabtree, 2006; Evans et al., 2006; Colantonio, 2007; Reed, 2007; Budd et al., 2008; Bramley and Power, 2009).

Clearly, there is a wealth of literature devoted to the ways in which social sustainability as social development might be achieved, yet much of this work has been undertaken under the auspices of the so-called 'brown-agenda' connected with less-developed and developing countries. This raises questions about the extent to which sustainability as social development might be considered relevant to those living in the so-called 'First World'. Bramley and Power (2009), for example, have argued that social sustainability in this context is often equated with social capital, social cohesion and social exclusion. This suggests that basic development issues, like access to necessary goods and services, have been successfully addressed and we should focus on what might be called 'higher-order' needs. Others have questioned whether this is, in fact, the case. Macnaghten and Jacobs (1999), Redclift (2005), Boone and Modarres (2006) and Eames (2006) have argued that the rhetoric and practice of sustainability in developed countries has not eliminated serious problems around poverty, malnutrition, poor-health and inadequate housing. Their work suggests that meeting people's basic needs *everywhere*, is a crucial part of wider developmental goals.

One of the social concerns driving sustainable development (as outlined in the Brundtland Report) is that it is only when people's basic needs are met that they can begin to actively address bio-physical environmental concerns, and this view is well-represented in the social sustainability of housing literature. Crabtree (2005), for example, has shown how poverty acts as a barrier in the uptake of green technologies, like solar panels and other means of generating electricity, or on-site waste disposal. She also notes that socially sustainable housing may require more flexible models of land tenure so as to enable those on low incomes to enjoy the benefits of good design and healthier homes. Burningham and Thrush (2003) focussed on energy efficiency as a kind of sustainable practice. They found that while energy efficient houses were ideal, it was almost impossible to actually save up over time to build such a home, or even purchase efficient appliances, when faced with the more immediate need to eat, keep the cold and draughts at bay, or purchase necessary medications. Bhatti and Dixon (2003) have concluded that it is a little unrealistic to expect people to care about global warming or species extinction when they are cold, hungry, seeking work, or feel unsafe in their own home.

Underpinning such work is a belief that in both developed and developing countries, poverty and under-development act as barriers to securing better social and bio-physical environmental outcomes. As such, development social sustainability includes a concern for a broad spectrum of issues ranging from quite tangible, very basic requirements – like potable water and healthy food, medication, housing – to less tangible needs concerning education, employment, equity and justice. It is anticipated (or hoped) that positive environmental benefits will follow.[1]

1.3. Bridge social sustainability

Rather than hoping, or simply expecting, that positive bio-physical environmental outcomes will follow development, a second strand of social sustainability literature actively and explicitly explores ways of promoting 'eco-friendly' behaviour or stronger environmental ethics (Hobson, 2003; Linden and Carlsson-Kanyama, 2003; Bhatti and Church, 2004; Frame, 2004; Barr and Gilg, 2006; Boolaane, 2006; Lindenberg and Steg, 2007; Rutherford, 2007; Vlek and Steg, 2007). Various disciplines and fields are well-represented here – psychology, human geography, socio-ecological studies, environmental sociology – and the goal is to build better *bridges*, or connections, between people and the bio-physical environment (Foladori, 2005). The social element in this approach reflects attempts to harness human potential so as to generate improved environmental outcomes or, as Chiu (2003, p. 26) has described it, identify 'the social conditions necessary to support ecological sustainability'.

In our view, these social conditions range from the 'non-transformative' provision of information about the environment and certain services (such as recycling schemes), to 'transformative' approaches that challenge fundamental ways in which 'the environment' is socially constructed (see Demeritt, 2002; Robinson, 2004). This distinction is important because transformative approaches radically 're-imagine' people's relationships with the environment, other humans and non-humans, whilst non-transformative methods are conventional, fairly limited in scope, and aspire only to small, incremental changes. At the transformative end of the spectrum are critics who have identified our current

practices as distanced from nature and highly dysfunctional, both in human and environmental terms. The trail arguably begins with White's *Historical Roots of Our Ecologic Crisis* (1967), and culminates in more recent contributions from across the social sciences, particularly human and cultural geography. Included in this collection is work from, for example, Cairns (2003) who promotes the notion of bio-philia and Carolan (2007) who advocates the idea of 'tactile space'; Macnaghten (2003) and Braun (2006) who are concerned with the ways in which the bio-physical environment and problems with aspects of it are understood and enacted in everyday life; Cardinal (2006) who describes the use of the Indigenous Indian medicine wheel which includes a cultural/spiritual dimension holding the economic, social and environmental sustainabilities together; Cameron et al. (2007) who advocate the notion of the 'bioregion' to dismantle social and political boundaries; Wolch (2007) who exhorts us to get out and 'wade around in the muck'; and others who explore post-positive/post-normal/post-human paths to sustainability that seek to overcome, challenge and dismantle the illusory dualism between society and the environment (see, for example, Green and Vergragt, 2002; Green and Foster, 2005; Eden and Tunstall, 2006; Head and Muir, 2006).

Non-transformative approaches, on the other hand, encourage us to do things differently without demanding fundamental changes to the way we relate to the world around us. Non-transformative versions of bridge sustainability often involve the adoption of technological innovations rather than changes in lifestyles or beliefs, thus the 'solutions' here include hybrid vehicles, the banning of CFCs, or the provision of recycling facilities. Scientific information tends to be an important part of non-transformative campaigns because it is usually presented – indeed, celebrated – as being neutral and value-free. Ironically, this seemingly benign 'objectivity' means it is sometimes difficult to make effective connections between expert knowledge and everyday life where values, emotions and ethics play important roles (Bulkeley, 2000; Macnaghten and Urry, 2000; Bickerstaff and Walker, 2003; Hobson, 2003; Macnaghten, 2003; Petts and Brooks, 2006; Wagner, 2007). In terms of everyday life, residents may be happy to install solar panels, double glazed windows and water recycling systems but may draw the line at 'transformative' composting toilets (which involves a more intimate engagement with human waste than standard 'flush it away' models), or moving from suburban settings to high-density, apartment style living arrangements.

In terms of connections between housing and social sustainability a variety of scholars have examined how people's relations with 'nature' can be transformed in suburban settings as they make ethical judgements about the way they use, and care for, their immediate environment (Blunt, 2005, see also Bhatti and Church, 2004). In a similar vein, Cloke and Jones (2001) have relied on the notion of 'dwelling', the ways that people are embedded in the world, as having the potential to help understand and stimulate the transformation of their environmental relationships in everyday settings, including those associated with housing (see, for example, King, 2004; Hargreaves, 2004). Crouch (2003a,b) presents the possibilities of 'performance' as people 'do' gardening allotments and, through this, stabilize particular versions of nature.

1.4. Maintenance social sustainability

The third strand of literature associated with social dimensions of sustainable development has emerged most recently and it is important that we identify it as a growing and cohesive body of work. Maintenance social sustainability speaks to the traditions, practices, preferences and places people would like to see *maintained* (sustained) or improved, such as low-density suburban living, the use of the private car, and the preservation of natural landscapes. These practices underpin people's quality of life, social

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[1] There is, of course, enormous debate over whether 'development', which is often equated with economic growth, is cause of or cure for bio-physical environmental problems (see Vallance and Perkins (2010) for an overview). We do not seek to address this particular debate here but simply aim to highlight this fairly well-defined body of 'development' work.

networks, pleasant work and living spaces, leisure opportunities, and so on. Maintenance social sustainability is, therefore, concerned with the ways in which social and cultural preferences and characteristics, and the environment, are maintained over time. This maintenance occurs through habit, movement and protest in the face of both local and global connections, and the influence they exert via technological innovation, resource shortage, immigration, employment opportunities, and other forces of change.

Ironically, one of the most recent and compelling forces of change is the sustainability imperative itself. This is because many eco-friendly proposals and programmes actually disrupt preferred or established patterns of behaviour, values and traditions that people would like to see preserved (such as private automobility and suburban living). Consequently, people may actively resist making changes that they believe detracts from their established and preferred ways of living. Understanding the reasons behind, and implications of, such refusals is important if bio-physical environmental goals are to be achieved or if the pursuit of such goals is not to become counter-productive.

Assefa and Frostell (2007), for example, argue that adverse environmental effects may arise when sustainability policies have limited 'social acceptance' or appear at odds with the local context (Scott et al., 2000). Clark (2007, p. 3) describes a case where inner-city car-parking fees that were designed to promote the use of public transport simply prompted an 'unanticipated or unregulated coping strateg[y]' where residents simply chose to drive to suburban malls where car-parking was free. Clark warns that the effects of such strategies may be worse than the original problem. As one example of this, Vallance's (2007) study into the meanings ascribed to the term 'urban sustainability' revealed that one city's efforts to enhance air quality through the regulation of solid fuel (wood burning) home heaters were possibly generating *more* emissions. The council-approved home fire models did indeed burn more cleanly, but they also burned more quickly, and this made it difficult to keep the fire going overnight. Subsequently, there developed a new counter-regulatory market for wetter, slower burning – but very smoky – firewood. In another example, Eskeland and Feyzioglu (1997) described how Mexico City's attempt to reduce private car use through a 1-day-a-week ban on each car actually *increased* pollution. In order to circumvent the ban, many households bought an additional car but, unfortunately, these extra vehicles tended to be cheaper, older models that actually generated more pollution. Other studies have shown that eco-strategies that impinge upon residents' perceived quality of life and comfort can lead to more passive resistance such as exaggerating the costs of change in order to justify their inertia, blaming others, and raising doubts over the effectiveness of their actions given the seemingly distant and uncertain nature of many environmental problems like climate change and pollution (Stoll-Kleeman et al., 2001; Petts, 2005). Consequently, a growing number of researchers have become interested in everyday life as underpinning 'social sustainability' and the ways in which it contributes to sustainable development more generally.

To come back to our example of housing, maintenance social sustainability suggests a sustainable city is one where people actually *want* to live. As Jenks et al. (1998, p. 84) noted, to be truly sustainable, the city must have a reasonable degree of support from local residents. If not, 'those who can will leave the city, and only the most disadvantaged will be left: a scenario which is unsustainable'. Maintenance social sustainability requires a good understanding of, for example, new housing developments, the layout of streets, open spaces, residential densities, the location of services, an awareness of habitual movements in place, and how they connect with housing cultures, preferences, practices and values, particularly those for low-density, suburban lifestyles (Hargreaves, 2004; Vallance et al., 2005; Howley, 2009; Vallance and Perkins, 2010).

2. Highlighting the gaps, overlaps and conflicts in social sustainability thinking

We have, thus far, identified three types of social sustainability (see Fig. 1): 'development sustainability' which addresses poverty and inequity; 'bridge sustainability' with its concerns about changes in behaviour so as to achieve bio-physical environmental goals; and 'maintenance sustainability' which refers to the preservation of socio-cultural patterns and practices in the context of social and economic change. The distinctions between these different perspectives on sustainability are very often overlooked, underestimated or ignored in much of the literature. As a corollary of this, the social sustainability literature is somewhat chaotic and sometimes contradictory or confusing.

This confusion can be attributed, at least in part, to conflict among and between the following three binaries:

- What people 'need' (development) versus what is good for the bio-physical environment (bridge).
- What people 'need' (development) versus what people want (maintenance).
- What is good for the bio-physical environment (bridge) versus what people want (maintenance).

We elaborate on each of these in turn below.

2.1. Development versus bridge sustainability

Superficially, these two forms of sustainability share the common goal of improving or preserving the integrity of the bio-physical environment upon which our survival as a species depends. Development sustainability emphasises the role both poverty and inequity play in environmental degradation and sees the alleviation of these as central to environmental well-being. Bridge sustainability privileges nature and a raft of techno-scientific measure that contribute to bio-physical environmental health with little thought for social consequences.

There is potential for these two sustainabilities to align, such as when housing is made both 'affordable' and 'green', and stimulates interest in bio-physical environmental issues. On the other hand, a number of recent studies have highlighted the need to be much more aware of the social implications of the solutions to bio-physical problems. Widespread use of public transport, for example, will depend on the provision of efficient, clean and safe services, but such facilities are likely to be more expensive and limited to high demand routes. Such a situation is likely to further exacerbate the exclusion of some marginalised groups and therefore act against the principles of sustainable development (Lucas et al., 2001; Eames, 2006). Others (Burningham and Thrush, 2003; Bhatti and Dixon, 2003) have come to similar conclusions in their studies of rising fuel costs brought about by the addition of VAT in the United Kingdom, and variations in supply. Poorer residents did not interpret the additional taxes as a means of countering climate change, but as an impediment to heating their homes adequately. This
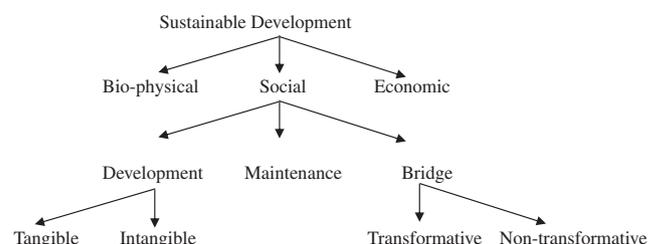

Fig. 1. Three strands of 'social sustainability'.

finding points to the need to address bio-physical environmental and social concerns together and to expand sustainable development beyond the 'brown-agenda' in order to think about the consequences of poverty and inequity in developed countries as well.

2.2. Development versus maintenance sustainability

There is much potential for these two forms of sustainability to conflict; what is good for the individual and particular groups is not always good for the wider collective. In the context of housing, for example, the establishment of gated communities designed to exclude certain groups may promote the inequitable location of public goods and services. Covenants, caveats and prices on sections/lots in new non-gated subdivisions prevent 'affordable' housing being built. In some cities, the desire for large lots puts increased pressure on land supply, and can drive prices up, denying poorer people the opportunity to own their own home, and leads to over-crowding. The inequitable distribution of environmental goods (and externalities) is the focus of many recent studies in the field of political ecology and has become the impetus driving the environmental justice movement (Heyen, 2006; Reed, 2007).

Also relevant here is the way many of today's consumer gadgets, toys and even houses, promote and intensify forces of individualisation and disengagement from public life (Macnaghten, 2003; Amin, 2006). Knox's (2005) commentary on the most recent re-enchantment of suburbia draws attention to the 'starter castle' housing, SUVs that make up compulsory 'driveway accessories' and 'gruesome affectations of spelling' that characterise many newer suburbs. He calls this latest iteration of the suburbs 'Vulgaria' to highlight the blatant assault on good taste demonstrated there. Vulgaria, he argues (2005, p. 34), serves to naturalise social and cultural power inherent in political-economic structures – currently 'competitive consumption, moral minimalism, and disengagement from notions of social justice and civil society' – and makes this order appear inevitable. Spatial segregation, particularly through the development of gated and semi-gated communities, reifies these structures (Dupuis and Thorns, 2008).

2.3. Bridge versus maintenance sustainability

The identification of a maintenance form of social sustainability is important because it builds on work contributing to a better understanding of the context within which we make sense of 'the environment', with a particular focus on the ways people *actively* adopt and resist measures developed or imposed in the interests of the bio-physical environment. Sometimes what is good for 'the environment' is also good for us personally, and changes are relatively easy to make given adequate institutional support. In many other cases, however, what is good for the environment clashes with small-scale, largely unexamined, habits as well as the more conscious preferences that are such an important part of people's everyday lives.

Hobson (2003) has explored the distinction between an embodied 'practical consciousness' that allows people to go about daily life without having to make decisions constantly, and a 'discursive consciousness' related to actions of which individuals are more aware. She has argued that small changes in our practical consciousness – not leaving the water running whilst brushing our teeth, or turning the light off when we leave the room – can yield good results; higher-order decision-making, such as that taking place when shopping, is more difficult to change. Barr (2003) noted a similar pattern whereby levels of recycling increased as it became easier and more convenient, but waste minimisation, which required a change in personal values, was more difficult to achieve. The point is that particular practices are maintained in different

ways and bridge sustainability measures need to be better targeted to these if they are to be successful.

Parading its objectives as being simply, or at least mainly, a matter of bio-physical environmental integrity, the sustainability movement often fails to acknowledge its Utopian underpinnings. As Kraftl (2007) has argued, although Utopia is usually understood in terms of what is ideal, the process of implementing these visions is never straightforward because it inevitably challenges and unsettles that which already prevails at a given time. Change, even change for the better, upsets the status quo. Callenbach's 'Ecotopia' (1975) provides a good case in point, though even less radical measures directed towards bio-physical environmental improvements, including the compact city movement, exhibit this tendency (Clark, 2005; Neuman, 2005; Vallance et al., 2005; Howley, 2009).

In this model, urban growth boundaries, increased residential densities, intensified land use, and so on, are imposed in the hope of preserving agricultural land, greenbelt peripheries and wildlife habitat and limiting the building of expensive marginal infrastructure. The potential to lower automobile use with an accompanying reduction in the use of fossil fuels, carbon dioxide emissions and traffic congestion is also listed as a benefit (Newman and Kenworthy, 1989). Mixed land uses incorporating commercial, industrial and residential activities are proposed to enable city residents to walk to work, further reducing the need for private automobiles. Although the list of supposed environmental benefits of compaction is long (and fiercely debated), the advantages may be lost on those urban residents who prefer low-density, suburban living and who see consolidation as an assault on established ways of life, community organisation, and aesthetics. The result may be a series of leapfrog towns advertised as an escape from the concrete jungle but which, ironically, negate many of the environmental benefits compaction hoped to achieve.

Given our other earlier examples of smoky fires in Christchurch and second cars in Mexico City, sustainability advocates would therefore do well to acknowledge that there are many circumstances which create an inevitable tension between 'bridge' and 'maintenance' aspects of social sustainability. Promoting bridge sustainability may require making sure that information is as much practical as it is scientifically correct, and relevant to a wide variety of citizens and interest groups (Walker, 1999; Bickerstaff and Walker, 2003; Whitehead, 2003; McDonald et al., 2004; Evans and Marvin, 2006). Overcoming the distance between these different versions of the concept might require not just better science, but also a better understanding of how to frame sustainability goals so that they seem more consistent with that which people value and would like to preserve.

3. Conclusions

A nascent body of work devoted to a wide range of social aspects of sustainability is emerging which complements the more established literature on sustainable development. This is encouraging given the widespread tendency to take advantage of its positive connotations without necessarily engaging with its social dimensions in any meaningful way. Less positively, ubiquitous references to social sustainability have created a rather messy conceptual field in which there is a good deal of uncertainty about the term's many meanings and applications. Though one response to this is to try and impose a singular, all-encompassing, definition, this denies much of the concept's complexity. Instead, we have identified three sub-categories of social sustainability which, in some respects, are in harmony with each other but in many other ways display a good deal of difference and potential for discord. Though it is necessarily more challenging, having reviewed the literature, we have concluded that a better appreciation for the complexities of these social dimensions is fundamental to

the success of the sustainable development movement more generally. We cannot assume that the various elements of social sustainability are able to be reconciled; sometimes they involve fundamentally incompatible goals.

Thus, a better recognition of the intricacies of social sustainability is clearly required, though this will no doubt raise concerns for the advocates of neo-liberalism who take the position that giving more than a little policy attention (and subsequent tax-payer support to social welfare and development) is somehow akin to social engineering. We need to resist such charges and advocate a strong social and cultural focus in sustainable development debates if these myriad tensions have any hope of being reconciled. Indeed, we challenge the now common reading of sustainable development as an 'environmental' problem and, instead, recast the idea as a social imperative that demands well-informed, theoretically robust, yet pragmatic, social solutions.

Expanded readings of social sustainability indicate the need to rely less on 'objective data' and 'scientific evidence' to stimulate changed human perspectives on bio-physical environmental issues. This is not a call to abandon environmental science, but rather a suggestion that its practitioners work alongside social scientists in order to explore how residents interpret, and incorporate concerns about, the places in which they live and the world around them. Despite optimistic proposals from some academics, politicians and local government managers for greater levels of participation, techno-science, neo-liberalisation and secularisation have created something of a normative vacuum that makes it difficult to effectively reconcile the three social sustainabilities.

We argue that the techno-scientific aspects of the sustainability imperative need to be augmented with a two-way dialogue of metaphors, stories, or symbols (Hahn, 2002; Cameron et al., 2007) that resonate with our everyday individual and collective experiences. This would not only provide clues as to how to make abstract concerns about global nature, and the problems that occur 'out there' or 'over there', relevant in local and everyday contexts that underpin maintenance sustainability, it would also give institutions the mandate to make decisions and act upon them.

Our identification of maintenance sustainability – concerning those ways of life that people would see maintained or improved – builds on this re-humanised, context-aware sustainability by highlighting why people ignore or resist eco-messages. It acknowledges the conflicts that often arise between doing what is environmentally friendly and doing what we have always done, doing what is easy, or simply doing what we like. Advocates of sustainability – who sometimes assume the facts about environmental crises will 'speak for themselves' – would do well to consider why people resist change, even when there are very good reasons for making those changes. A re-statement of the importance of social development, and the adverse impacts some eco-strategies have on already disadvantaged groups, combined with a better understanding of the ways in which technical aspects of sustainability resound in everyday life, are central to a smoother and more equitable transition from less to more sustainable futures. Thus, we conclude that the enormous potential of sustainable development can only be realised through a better understanding of its tripartite *social* components but that these, in themselves, cannot be assumed to be closely aligned. By identifying ways in which they can also be contradictory we have highlighted the necessity of working through underlying conflicts so as to find equitable and meaningful solutions to the problems confronting us.

References

Amin, A., 2006. The good city. Urban Studies 43 (5–6), 1009–1023.
Assefa, G., Frostell, B., 2007. Social sustainability and social acceptance in technology assessment: a case study of energy technologies. Technology in Society 29, 63–78.
Barr, S., 2003. Strategies for sustainability: citizens and responsible environmental behaviour. Area 35 (3), 227–240.
Barr, S., Gilg, A., 2006. Sustainable lifestyles: framing environmental action in and around the home. Geoforum 37 (6), 906–920.
Basiago, A., 1998. Economic, social and environmental sustainability in development theory and urban planning practice. Environmentalist 19, 145–161.
Bhatti, M., Church, A., 2004. Home, the culture of nature and meanings of gardens in late modernity. Housing Studies 19 (1), 37–51.
Bhatti, M., Dixon, A., 2003. Special focus: housing, environment and sustainability. Housing Studies 18 (4), 501–504.
Bickerstaff, K., Walker, G., 2003. The place(s) of matter: matter out of place–public understandings of air pollution. Progress in Human Geography 27 (1), 45–67.
Blunt, A., 2005. Cultural geography: cultural geographies of the home. Progress in Human Geography 29 (4), 505–515.
Boolaane, B., 2006. Constraints to promoting people centred approaches in recycling. Habitat International 30 (4), 731–740.
Boone, C., Modarres, A., 2006. City and Environment. Temple University Press, Philadelphia.
Bramley, G., Power, S., 2009. Urban form and social sustainability: the role of density and housing type. Environment and Planning B 36 (1), 30–48.
Braun, B., 2006. Environmental issues: global natures in the space of assemblage. Progress in Human Geography 30 (5), 644–654.
Budd, W., Novrich, N., Pierce, J., Chamberlain, B., 2008. Cultural sources of variations in US urban sustainability attributes. Cities 25, 257–267.
Bulkeley, H., 2000. Common knowledge? Public understanding of climate change in New Castle, Australia. Public Understanding of Science 9, 313–333.
Burningham, K., Thrush, D., 2003. Experiencing environmental inequality: the everyday concerns of disadvantaged groups. Housing Studies 18 (4), 517–536.
Cairns, J., 2003. Materialphilia, biophilia, and sustainable use of the planet. International Journal of Sustainable Development and World Ecology 10 (1), 43–48.
Callenbach, E., 1975. Ecotopia: The Notebooks and Reports of William Weston. Bantam, Random House, New York.
Cameron, J., Mulligan, M., Wheatley, V., 2007. Building a place-responsive society through inclusive local projects and networks. Local Environment 9 (2), 147–163.
Campbell, S., 1996. Green cities, growing cities, just cities? Urban planning and the contradictions of sustainable development. Journal of the American Planning Association 62, 296–312.
Cardinal, N., 2006. The exclusive city: identifying, measuring, and drawing attention to aboriginal and indigenous experiences in an urban context. Cities 23 (3), 217–228.
Carolan, M.S., 2007. Introducing the concept of tactile space: creating lasting social and environmental commitments. Geoforum 38 (6), 1264–1275.
Chiu, R., 2002. Social equity in housing in the Hong Kong special administrative region: a social sustainability perspective. Sustainable Development 10 (3), 155–162.
Chiu, R., 2003. Social sustainability and sustainable housing. In: Forrest, R., Lee, J. (Eds.), Housing and Social Change: East, West Perspectives. Routledge, London, New York, pp. 221–239.
Clark, M., 2005. The compact city: European ideal, global fix or myth? Global Built Environment Review 4 (3), 1–11.
Cloke, P., Jones, O., 2001. Dwelling, place and landscape: an orchard in Somerset. Environment and Planning A 33, 649–666.
Colantonio, A. 2007. Social Sustainability: An exploratory analysis of its definition, assessment methods, metrics and tools. In: Measuring Social Sustainability: Best Practice from Urban Renewal in the EU 2007/01: EIBURS Working Paper Series. Oxford Institute for Sustainable Development (OISD), International Land Markets Group, Oxford Brookes University, Oxford, UK.
Crabtree, L., 2005. Sustainable housing development in urban Australia: exploring obstacles to and opportunities for ecocity efforts. Australian Geographer 36 (3), 333–350.
Crabtree, L., 2006. Sustainability begins at home? An ecological exploration of sub/urban Australian community-focused housing initiatives. Geoforum 37 (4), 519–535.
Crouch, D., 2003a. Performances and constitutions of natures: a consideration of the performance of lay geographies. The Sociological Review 51 (s2), 17–30.
Crouch, D., 2003b. Spacing, performing and becoming: tangles in the mundane. Environment and Planning A 35, 1945–1960.
Demeritt, D., 2002. What is the 'social construction of nature'? A typology and sympathetic critique. Progress in Human Geography 26 (6), 767–790.
Dupuis, A., Thorns, D., 2008. Gated communities as exemplars of 'forting up' practices in a risk society. Urban Policy and Research 26 (2), 145–157.
Eames, M., 2006. Reconciling Environmental and Social Concerns: Findings from the JRF Research Programme. The Joseph Rowntree Foundation, York, The Homestead, 40 Water End, York, YO30 6WP, UK.
Eden, S., Tunstall, S., 2006. Ecological versus social restoration. Environment and Planning C 24, 661–680.
Enyedi, G., 2002. Social sustainability of large cities. Ekistics 69 (412–414), 142.
Eskeland, G., Feyzioglu, T., 1997. Rationing can backfire: the day without a car. World Bank Economic Review 11 (3), 383–408.
Evans, R., Marvin, S., 2006. Researching the sustainable city: three modes of interdisciplinarity. Environment and Planning A 38 (6), 1009–1028.
Evans, B., Joas, M., Sundback, S., Theobald, K., 2006. Governing local sustainability. Journal of Environmental Planning and Management 49 (6), 849–867.

Foladori, G., 2005. Advances and limits of social sustainability as an evolving concept. Canadian Journal of Development Studies – Revue Canadienne D Etudes Du Developpement 26 (3), 501–510.

Frame, B., 2004. The big clean up: social marketing for the Auckland region. Local Environment 9 (6), 507–526.

Godschalk, D.R., 2004. Land use planning challenges: coping with conflicts in visions of sustainable development and livable communities. Journal of the American Planning Association 70 (1), 5–13.

Green, K., Foster, C., 2005. Give peas a chance: transformations in food consumption and production systems. Technological Forecasting and Social Change 72 (6), 663–679.

Green, K., Vergragt, P., 2002. Towards developing sustainable households: a methodology for developing sustainable technological and social innovations. Futures 34, 381–400.

Gunder, M., 2006. Sustainability: planning's saving grace or road to perdition? Journal of Planning Education and Research 26 (2), 208–223.

Hahn, E., 2002. Towards ecological urban restructuring: a challenging new eco-cultural approach. Ekistics 69 (412–414), 103–115.

Halme, M., Jasch, C., Scharp, M., 2004. Sustainable homeservices? Toward household services that enhance ecological, social and economic sustainability? Ecological Economics 51 (1–2), 125–138.

Hargreaves, A., 2004. Building communities of place: habitual movement around significant places. Journal of Housing and the Built Environment 19 (1), 49.

Head, L., Muir, P., 2006. Suburban life and the boundaries of nature: resilience and rupture in Australian backyard gardens. Transactions of the Institute of British Geographers 31 (4), 505–524.

Heyen, N., 2006. Green urban political ecologies: toward a better understanding of inner-city environmental change. Environment and Planning A 38 (3), 499–518.

Hobson, K., 2003. Thinking habits into action: the role of knowledge and process in questioning household consumption practices. Local Environment 8 (1), 95–112.

Howley, P., 2009. Attitudes towards compact city living: towards a greater understanding of residential behaviour. Land Use Policy 26 (3), 792–798.

Jenks, M., Burton, E., Williams, K., 1998. The Compact City: A Sustainable Urban Form? E and FN Spon, London, New York.

Kallstrom, H.N., Ljung, M., 2005. Social sustainability and collaborative learning. Ambio 34 (4–5), 376–382.

King, P., 2004. Private Dwelling: Contemplating the Use of Housing. Routledge, London and New York.

Knox, P., 2005. Vulgaria: the re-enchantment of suburbia. Opolis 1 (2), 33–46.

Kraftl, P., 2007. Utopia, performativity, and the unhomely. Environment and Planning D – Society and Space (25), 120–143.

Linden, A., Carlsson-Kanyama, A., 2003. Environmentally friendly disposal behaviour and local support systems: lessons from a metropolitan area. Local Environment 8 (3), 291–301.

Lindenberg, S., Steg, L., 2007. Normative, gain and hedonic goal frames guiding environmental behaviour. Journal of Social Issues 63 (1), 117–137.

Lucas, K., Grosvenor, T., Simpson, R., 2001. Transport, the Environment and Social Exclusion. Joseph Rowntree Foundation, York, The Homestead, 40 Water End, York, YO30 6WP, UK.

Macnaghten, P., 2003. Embodying the environment in everyday life practices. The Sociological Review 51 (1), 63–84.

Macnaghten, P., Jacobs, M., 1999. Public identification with sustainable development. Global Environmental Change 7 (1), 5–24.

Macnaghten, P., Urry, J., 2000. Contested Natures. Sage, London.

Marcuse, P., 1998. Sustainability is not enough. Environment and Urbanization 10, 103–111.

McDonald, A., Lane, S., Haycock, N., Chalk, E., 2004. Rivers of dreams: on the gulf between theoretical and practical aspects of an upland river restoration. Transactions of the Institute of British Geographers 29 (3), 257–281.

Mitlin, D., Satterthwaite, D., 1996. Sustainable development and cities. In: Pugh, C. (Ed.), Sustainability, the Environment and Urbanisation. Earthscan, London, pp. 23–61.

Nahapiet, J., Ghosal, S., 1998. Social capital, intellectual capital and the organizational advantage. Academy of Management 23 (2), 242–266.

Neuman, M., 2005. The compact city fallacy. Journal of Planning Education and Research 25, 11–26.

Newell, S., Tansley, C., Huang, J., 2004. Social capital and knowledge integration in an ERP project team: the importance of bridging and bonding. British Journal of Management 15, S43–S57.

Newman, P., Kenworthy, J., 1989. Cities and Automobile Dependence. Aldershot, Gower.

Petts, J., 2005. Health, responsibility and choice: contrasting negotiations of air pollution and immunisation information. Environment and Planning A 37, 791–804.

Petts, J., Brooks, C., 2006. Expert conceptualisations of the role of lay knowledge in environmental decisionmaking: challenges for deliberative democracy. Environment and Planning A 38 (6), 1045–1059.

Polese, M., Stren, R., 2000. The Social Sustainability of Cities. University of Toronto Press, Toronto.

Redclift, M., 2005. Sustainable development (1987–2005): an oxymoron comes of age. Sustainable development 13 (4), 212–227.

Reed, M.G., 2007. Seeking red herrings in the wood: tending the shared spaces of environmental and feminist geographies. Canadian Geographer-Geographe Canadien 51 (1), 1–21.

Robinson, J., 2004. Squaring the circle? Some thoughts on the idea of sustainable development. Ecological Economics 48, 369–384.

Rutherford, S., 2007. Green governmentality: insights and opportunities in the study of nature's rule. Progress in Human Geography 31 (3), 291–307.

Sachs, I., 1999. Social sustainability and whole development. In: Becker, E., Jahn, T. (Eds.), Sustainability and the Social Sciences. Zed Books and UNESCO, New York, pp. 25–36.

Scott, K., Park, J., Cocklin, C., 2000. From 'sustainable rural communities' to 'social sustainability': giving voice to diversity in Mangakahia Valley, New Zealand. Journal of Rural Studies 16 (4), 433–446.

Stoll-Kleeman, S., O'Riordan, T., Jaeger, C., 2001. The psychology of denial concerning climate mitigation measures. Global Environmental Change 11, 107–117.

Strigl, A., 2003. Science, research knowledge and capacity building. Environment, Development and Sustainability 5, 255–273.

Vallance, S., 2007. The Sustainability Imperative and Urban New Zealand, Unpublished Doctoral Thesis. Environment, Society and Design Division, Lincoln University, P.O. Box 84, Lincoln 7647, Canterbury, New Zealand.

Vallance, S., Perkins, H.C., 2010. Is another city possible? Towards an urbanised sustainability. City 14 (4), 448–456.

Vallance, S., Perkins, H.C., Moore, K., 2005. The results of making a city more compact: neighbours' interpretation of urban infill. Environment and Planning B: Planning and Design 32 (5), 715–733.

Vlek, C., Steg, L., 2007. Human behavior and environmental sustainability: problems, driving forces, and research topics. Journal of Social Issues 63 (1), 1–19.

Wagner, M., 2007. Vernacular science knowledge: its role in everyday life communication. Public Understanding of Science 16 (1), 7–22.

Walker, G., 1999. Polluters, victims, citizens, consumers, obstacles, outsiders and experts. Local Environment 4 (3), 253–256.

White, L., 1967. The historical roots of our ecologic crisis. Science 3767 (155), 1203–1207.

Whitehead, M., 2003. (Re)analysing the sustainable city: nature, urbanisation and the regulation of socio-environmental relations in the UK. Urban Studies 40 (7), 1183–1206.

Wolch, J., 2007. Green urban worlds. Annals of the Association of American Geographers 97 (2), 373–384.

World Commission on Environment and Development, 1987. Our Common Future. Oxford University Press, USA.