***Constructing definitions of sustainable development***

**Abstract**

**Purpose:** This paper asks how two normative definitions of sustainable development identified in the Brundtland report contribute to individual definitions constructed by a network of professional actors working in the construction industry.

**Design / methodology:** This paper draws on 74 questionnaires generated from a purposive sample of professional actors working in the construction sector. These questionnaires are analysed using a coding strategy based on pre-defined categories generated from a review of academic and policy literature.

**Findings:** The results show that these definitions mostly appeal to actors working in roles with a strong input into the design process. The evidence suggests that all professional actors in the construction industry construct definitions of sustainable development to valorise their professional role, to support professional critiques of the industry or to reinforce their personal ideological beliefs.

**Research implications:** These results present a challenge to a normative agenda aimed at ‘pinning the concepts down’ to an unequivocal, universal definition. It suggests that research might be better redirected towards a context-dependent and pragmatic use of the term.

**Practical implications:** These findings suggest that future policy-making should acknowledge multiple, sector and role specific definitions of sustainable development. It also suggests that a better understanding of this diversity within the construction industry could improve the efficiency of the design, procurement and construction process.

**Originality:** These findings provide new insight into the ‘in use’ definitions of sustainable development in the construction industry and question some of the academic arguments that support a single, universal definition of the term.

Key words: Sustainable development, sustainable construction, sustainability, policy concepts, building design, construction industry

**Introduction**

The Brundtland Commission’s 1987 report entitled *Our Common Future* ‘led directly to the term ‘sustainable development’ passing into policy discourse, if not into everyday language’(Redclift 2005, p.212). The normative use of definitions drawn from this report have marked the evolution of the concept over the last 30 years (Redclift 2005). The report provides two such normative definitions. The first is often termed the *Our Common Future* definition, is explicitly defined within the report as ‘meeting the needs of the present without compromising the ability of future generations to meet their needs’ (WCED 1987). The second, known as the ‘*Three Pillars of sustainability’* was implicitly identified within the report as a broader objective to link economic, social and environmental concerns.

Wackernagel and Rees (1996) note that these definitions were kept relatively vague to ensure their wide-scale acceptable. Such strategies of institutionalisation are common to many policymaking processes. The concept of ‘polycentricity’, for example, was purposefully kept vague during the policy discussions in the making of the European Spatial Development Perspective to ensure cross party consensus (Faludi & Waterhout 2002). Yet, for academics like Markusen (1999), this embedded vagueness results in a concept that ‘lacks rigour’ and a limited capacity to make a meaningful contribution to practice. To resolve this, she argues, one should find ways to ‘pin (such concepts) down…. to a set of characteristics that could be unequivocally posited and would be understood in the same way by all readers’ (Markusen, 1999: 703). Markusen is not alone in this position. Christen and Schmidt suggest that, whilst ‘arbitrary’ or ‘random’ definitions do not necessarily lead to inappropriate outcomes, the absence of rational justification and clarity prevent these actions from operating as a broader guiding power (2012: 400).

These calls have been met with various efforts to ‘pin down’ the concept of sustainable development. For Dobson (1996), such efforts can be characterised by three strategies. The first looks to establish a universal definition that unites several different perspectives. The second, discursive approach is constructed through a review of the concept’s evolution over time to identify key traits. For Dobson, these two strategies are limited as they are often redundant at the point of completion. As an alternative, Dobson suggests a third strategy in which a typological framework is used to position all existing and future conceptions. This focus on a conceptual framework has resonated with academic and policymaking communities. However, a small body of studies have questioned these efforts to ‘pin down’ concepts like ‘sustainable development’ through a universal definition or framework. For this small group of researchers, policy concepts are ‘context dependent’ (Shaw & Sykes 2004), and defined in response to the pragmatic demands of practice (Abrahams 2014).

On the basis of this debate between the construction of a universal definition / framework and a context dependent definition, the following research question was identified for further study.

*What is the role played by normative definitions of sustainable development in the way actors working in a network of construction professionals construct their own definitions of sustainable development?*

This research question was explored in three parts. The first part of the paper provides a review of literature regarding attempts to define sustainable development beyond the Brundtland report. This literature review identifies several core themes which are used to analyse data generated through a case study. The third part of the paper considers how the results from this case study contribute to academic debates in the field, policy development and construction practice / education.

**Literature review**

***The role of academic ideals and conceptions***

Redclift (2005) notes that the history of the sustainable development concept following the Brundtland report has been marked by other academic concepts and ideals. These range from an ideological belief in equity and social justice to economic ideology captured in support or contestation of Keynesian and neoliberal economic agendas and, more broadly, of globalisation and localism (2005). Some of these ideological positions have had a significant influence in the construction of conceptual frameworks. A good example of this can be seen in the conceptual framework proposed by Hopwood et al (2005). As with many other attempts, Hopwood et al construct their conceptual framework around the *Three Pillars* definition of sustainable development. However, unlike many policy-orientated and practice-orientated frameworks (such as the Framework for Strategic Sustainable Development), Hopwood et al define and structures these pillars by drawing on two conceptual stances used in academic literature.

The first of these is taken from a study by Haughton and his argument that the concept of sustainable development is underpinned by an ‘essential environmental justice dimension’ (1999: 235). This fundamental trait is used to set out five interconnected equity principles central to all policy-based or academic discussions of the term: inter-generational equity, intra-generational equity, territorial equity, procedural equity, inter-species equity (1999). The second is taken from a conceptual distinction commonly used in environmental studies, which distinguishes ecocentric views from technocentric views (O’Riordan 1989; Pearce 1993).

Hopwood et al use these two academic concepts/ ideals to distinguish between a socio-economic axis of sustainability and an environmental axis. The former is used to position a policy document by its support for the five principles of equity, whilst the latter positions the policy by its alignment with econcentrist or technocentrist views. These structuring ideas are used to develop a further conceptual distinction between policies that support the status quo, reform or transformation.

Such attempts have not gone without criticism. Dobson argues that they force the researcher to ‘squeeze’ differing definitions into an a *priori* conceptual model rather than developing a framework that aligns with the findings (1999). As an alternative, Dobson suggests that one should develop a conceptual framework by asking more practical questions such as ‘What is to be sustained?’, ‘Why is it to be sustained?’, ‘Who/what is concerned?’ and ‘In what respect is substitutability allowed?’.

***The role of professional concerns***

Dobson’s attempts to frame sustainable development through practical rather than conceptual and idealist terms is developed further through sector-specific conceptual frameworks. As with Hopwood et al’s study, these frameworks start by expanding the Brundtland definition. But unlike such attempts they develop these definitions by taking account of specific interests and roles played by professional actors in the construction sector. This focus on sustainable construction as an ‘offshoot’ of sustainable development is reflected in a broader shift in policy debates as reflected in two subsequent UN summits: the 1992 Rio summit and the resulting Agenda 21; the 1997 Istanbul summit and the resulting Habitat II Agenda.

For Hill and Bowen (1997), such policy reports present an opportunity to develop the three pillars of sustainable development into the ‘four’ pillars of sustainable construction. Rather than economic, environmental and social concerns, this sector-specific approach, they argue, should take account of social, economic, biophysical and technical sustainable development. This adaptation of the normative *Three Pillars* definition has been developed by Son et al who use these four pillars to situate specific tasks undertaken in practice including site planning, the selection of materials and recycling strategies (2011).

The CIB has develop a more sophisticated sector-specific conceptual framework for sustainable development. This framework draws on normative definitions of sustainable development defined by the Brundtland report but also includes many of the sector specific-points raised in Agenda 21. In doing so, the framework highlights the important role played by material selection, recycling, lifecycle analysis and cost analysis (CIB 1999).

Several studies have since explored the relevance of such factors in construction practice. Pitt et al’ study (2009) found that many of these factors were reflected in the views of construction professionals, whilst data from Williams and Dair’s study lead to a contrary conclusion. Drawing on interviews with professional actors working in design, construction and client-based roles Williams and Dair found that such actors had a poor understanding of sustainable development and its effects on the construction process (2007). Such studies highlight the uncertainty surrounding the link between a universal conception of sustainable development and individual actors working in the construction sector.

***The role of an individual’s outlook***

Several academic studies suggest that a misalignment between a universal definition and an individual definition is inevitable. Giddings et al (2002) argue that the definition of sustainable development varies in accordance with an individual’s personal situation and their philosophical beliefs. As such, one would not necessarily expect an architect to hold the same understanding of sustainable development as a quantity surveyor. Similarly, one may not expect all architects to hold the same view, as they may have different philosophical positions. A similar argument is presented by Morse (2008) whose proposals for ‘post-sustainable development’ rejects the assumption that different views can be captured in a singular consensual definition or framework (see also Hillier 2003).

Looking outside the debates on sustainable development one can identify support for this person / context-centric understanding of policy concepts in arguments presented by Gunder and Hillier in their review of sustainability (2009), by Shaw and Sykes in their study of polycentricity (2004) and Abrahams in his study of territorial cohesion (2014) and the sustainable building (2016).

This brief review of the literature highlights the various efforts made to develop a conceptual framework to ‘pin down’ the normative definitions identified in the Brundtland Report. But it also identifies a number of criticism directed against such efforts. These studies point towards an individual rather than universal definition of the term. Three themes have emerged from this literature which help articulate these different arguments.

1. The role of academic conceptions and ideals
2. The role of professional practice
3. The role of an individual’s points of view and outlook

As discussed in the following section, these themes were used as tentative coding categories in data analysis.

**Method**

Yin (1984) argues that a case study approach is preferable in instances when a line of empirical enquiry is used to study a phenomenon that cannot be easily divorced from the context in which it operates. This indivisibility is poignant to this research which asks how actors working in the construction sector define sustainable development in practice. Given the lack of replicability associated with functioning, professional networks, this study is explored as a single-case centred on a single network.

The methods used to identify this sample, conduct the research and analyse the results are outlined in the following.

***Data generation method***

Following a review of data generation methods in the social sciences, questionnaires were selected as the preferred method. These were seen to offer two benefits. Firstly, a clearly formed and simple questionnaire can improve response rates when compared to other methods such as interviews. Secondly, questionnaires can be easily distributed over a large professional network using the sampling methods described below.

The questionnaire was structured around four open questions:

1. What do you think sustainable development means?
2. What do you think sustainability should mean?
3. What should the design / contractor team do to encourage sustainability or to act in a more sustainable way?
4. If you were to use another word for sustainability what would it be?

Open questions was used to encourage the respondent to construct a definition that aligned with his or her own views rather than re-iterating an industry standard. This paper focuses on the results of questions 1 and 2. Questions 3 and 4 will be the focus of a future paper.

***Sample selection method***

A purposeful sampling strategy was selected to align with the research question (Curtis et al. 2000). Unlike random sampling strategies that favour generalizable findings, a purposeful sampling strategy is widely used in qualitative research where the aims are to explore a specific issue by identifying and selecting individuals with specific knowledge and experience of that issue (Patton 2015; Creswell & Plano Clark 2011; Ritchie et al. 2014).

Of the sampling techniques commonly used in purposeful sampling strategies this study employed targeted and snowball sampling methods to access key actors in an active professional network (Thompson 1997) that would be otherwise inaccessible to many other sampling techniques (Griffiths et al. 1993; Kaplan et al. 1987). Social science methods literature suggests that one must acknowledge the risk of bias often associated with these techniques and, where possible, employ strategies to reduce them. These include the researcher’s selection bias, bias inherent in existing social networks (Griffiths et al. 1993) and gatekeeper bias (Groger et al. 1999). These different kinds of bias and the measures taken to acknowledge or mitigate them are discussed below.

*Researcher selection bias:*

In this study, selection bias within the sample relates to the node in the professional network from which the targeted samples and snowballs were formed i.e. the point at which one commences a snowball sample. The decision was made to start the snowballing process within an architect’s practice. The reasons for this decision are twofold. Firstly, in Traditional and Design and Build procurement routes in the UK the architect often acts as the lead designer and coordinator of the design process, and plays a key role in the construction process. Secondly, on large and complex schemes in particular, the architect is one of the only actors whose role stretches across all or most RIBA stages of work (RIBA 2013). Whilst such measures are reasonable, the decision to focus on a UK-based architect’s practice as the centre of a professional network introduces sampling limitations that should be addressed in future research.

*Network bias and gateway:*

Several studies have suggested that the social relationships and pre-conceptions embedded in a network limit who is selected from within that network (Griffiths et al. 1993; Groger et al. 1999). Whilst a study may achieve redundancy of information within a given sample, one cannot necessarily guarantee the maximum variation within the sample because one must rely in the value judgements of others. To mitigate the impacts of network and gateway bias several criteria were introduced to help guide snowballing and to assess its relevance. This second sampling technique (Palinkas et al. 2015) helped refine the sample in two ways. Firstly, these criteria were conveyed to targeted actors to help direct the snowball towards individuals that might be otherwise excluded. Secondly, they were used to confirm the snowballing choices made by other actors in the network. Three criteria were used for these purposes:

*Criterion 1: Professional experience / education.* All respondents to have a minimum of 1 year experience working in professional practice on complex schemes (ranging between 1-5 million construction value), and be educated to a minimum of degree level within their professional discipline. This criterion was used to ensure that the responses reflected views particular to their respective discipline and had developed these views by drawing on professional and academic knowledge and experience.

*Criterion 2: Professional role.* Respondents to be selected from a range of professional disciplines from the design-based and construction-based Work Stages as set by the Royal Institute of British Architects (RIBA 2013). As a minimum, this should include at least two architects / technologists, structural engineers, service engineers and cost-consultants / quantity surveyors operating in the design team and the construction team. The sample should also look to include other specialist consultants and contractors such as environmental (BREEAM) assessors and fire consultants. This criterion was used to ensure the sample covered the widest range of professional interests possible.

*Criterion 3: Relationship within network.* All actors should have at least one and preferably two connections to other actors in the sample. This criterion ensured that respondents in the sample had developed their definitions on similar projects. In doing so, it acknowledged the possibility that definitions may be constructed through certain kinds of experiences working with select individuals on certain kinds of project. Further research is needed to consider whether different networks of actors produce different definitions / combinations of definitions.

Of the 100 questionnaires distributed, 74 responses were received from professionals working across a range of roles in the design and construction process (Table 1). According to Teddlie and Yu (2007) this sample size is larger than a typical purposive sample (usually less than 30) and larger than the minimum requirements of a representative sample (usually greater than 50).

Table 1: Sample of respondents

[insert table here]

Whilst these criteria ensured a wide range of actors across the construction sector, the table shows a large response rate from professionals working in architectural roles including architects, technical staff and BIM coordinators. On this basis, the sample is not considered statistically representative of the industry as a whole. Rather, the purposive sample was used to improve the ‘validity of the analysis rather than the representativeness of the events’ (Mitchell 1983). As per Mitchell’s arguments, this is achieved by identifying logical and explanatory linkages drawn from the analysis (1983: 199-200) to contribute to the literature.

***Data analysis method***

The aim of data analysis was twofold: to look for evidence of the two normative definitions in how practitioners define sustainable development, and to understand *how* these definitions were used within such definitions. With this in mind, data analysis was structured into three key stages drawing on the principles set out in social science research methods literature (Saldaña 2016).

The first stage was used to look for evidence of the two normative definitions in how practitioners define sustainable development. To achieve this, all responses were coded using pre-defined categories based on the two normative definitions. The parameters of this coding exercise were defined in advance. Responses were positioned in the *Our Common Future* category if they made explicit references to ‘future generations’, or implicit references to inter/intra-generational responsibility. Reponses were positioned in the *Three Pillars* definition if they made explicit references to more than one of the three pillars and suggested that these pillars were connected in some way. The third category, *No obvious connection*, was formed from all other definitions.

In order to refine the insights drawn from the first stage, the second coding stage looked to understand *how* these definitions were used within the practitioner’s definition. To achieve this, each response within the three categories identified in the first stage were coded using the three analytical themes drawn from the literature review. Namely,

* The role of academic conceptions and ideals
* The role of professional practice
* The role of an individual’s points of view and outlook

These three themes were used as tentative coding categories rather than fixed categories to ensure they did not restrict the analytical process (Eisenhardt 1989).

A third stage of coding was used to refine and revise the categories identified in the analysis.

**Results**

The aim of this research was to explore the role played by normative definitions of sustainable development in the way actors working in a network of construction professionals construct their own definitions of sustainable development.

The results suggest that such actors do use these definitions to construct an individual definition of sustainable development. But it also suggests that they do so in very different ways and to serve very different aims. These results problematise the assumption that policy concepts like ‘sustainable development’ can be defined using universal terms or through a universally applicable framework. Instead, this research provides support to a small body of work calling for a context-dependent, pragmatic approach to policy definition.

The following text sets out the key findings from this study in greater detail.

***Framing and adapting normative definitions***

Of the 74 respondents, 57 formed definitions of sustainable development by drawing on the concepts embedded within *Our Common Future* and the *Three Pillars*. These definitions were particularly evident in responses from actors working in a design capacity or with contractor-based roles with strong affiliations with members of the design team (such as design managers). Qualitative analysis of the data revealed key observations that help explain how these definitions were constructed.

***Using normative definition to valorise a professional role***

The first observation suggests that generic understandings of the concept are framed through the respective actor’s professional role in the building industry and the specific tasks they undertaken within this role. The focus of these links varies across the sample. Many respondents used the *Three Pillars* definition to assert the importance of the design process in general. One such respondent argued that ‘[sustainable development is] the act of making decisions that take into account environmental, economic and social consequences across the project life cycle’ whilst others took this argument further by arguing that ‘holistic embedded decision making’ is fundamental to all ‘good designs’.

Others, particularly those drawing on the *Our Common Future* definition, refined these links by focusing on a specific role in the design process. One architect, for example argued that,

…it [sustainable development] is about ensuring current processes do not have a negative impact on future generations. The design and construction of low impact buildings utilising location and orientation to maximise daylight / solar gain and solar shading / natural ventilation.

This response demonstrates an attempt to frame a broad, normative definition of sustainable development through a specific set of actions undertaken within the early stages of the design process. In doing so, the respondent implies that the work undertaken by this professional group is fundamental to achieving national and international policy goals.

Whilst this link between a normative definition and a specific set of functions was more pronounced in responses from architectural professions, one can find similar inferences from other professional actors. One service engineer, for example, noted that sustainable development means,

Deliver(ing) buildings that minimise the impact of our resources and minimise effects to the environment now and for future generations… [sustainable development] should mean providing practical solutions that offer measurable reductions in energy/carbon emissions …

In this definition, the respondent suggests that reducing the impact on future generations (as set out in the *Our Common Future* definition) is best achieved by solutions that can demonstrate a ‘measurable reduction in energy/carbon emissions’. Given that the calculation of U values, thermal models and the design of an effective mechanical and electrical strategy is almost exclusively within the professional scope of a service engineer this definition is equally used to reinforce the importance of their role in the design process and larger policy objectives more broadly.

Not all such definitions in the sample were limited to a single normative definition. A heritage consultant, for example, defined sustainable developed as,

… ensuring future generations have sufficient resources to live to a reasonable standard…I would distinguish this environmental sustainability from economic sustainability, which is a separate concept… I think sustainability should also mean ensuring that our inheritance of historic buildings, landscape and traditional skills is passed on intact to future generations … and so I think sustainability should also encompass social concerns ….

In this response, one can see how the *Our Common Future* definition is used to frame a conceptual split in the *Three Pillars* in which economic sustainability is considered in isolation of environmental and social sustainability. This conceptual construct reveals the complex ways in which some actors define the concept by adapting and combining established, normative definitions to reinforce their own role in the design process.

***Using normative definition to support a professional critique***

These examples show that individual definitions of sustainable development are created by forging links between universally applicable definitions and very specific roles and skills within the building industry. Such links were not limited to professional valorisation but also extended into professional critiques and personal ideological beliefs. One respondent, for example, noted,

Sustainability means nothing in excess / think about present and future resources / think about our environment… People usually think sustainability is about CO2 emissions and energy saving. The worst is when it is only about BREEAM [The Building Research Establishment’s Environmental Assessment Method].

Similar arguments were made by two other architects who added that BREEAM failed to address ‘wider aspects [of sustainable development]’ and that efforts were needed to develop a ‘holistic approach [that] … go[es] beyond the tick-box approach of BREEAM’. Such definitions had their counterpart in the responses offered by several service engineers who suggested that ‘sustainable development is [defined by] BREEAM ratings’ or stressed the importance of a quantifiable, universally applicable method like BREEAM.

These differences reflect key arguments within a much broader debate across the industry about the role played by sustainable assessment methods like BREEAM and the ideas embedded in their construction (Cole 2005; Schweber 2013; Faulconbridge 2015). As such, one can see how normative definitions are not only used to reinforce the professional role of the individual but to reinforce critical positions adopted by different disciplines.

***Using normative definition to support an ideological belief***

Several respondents developed these normative definitions further by using them to support a personal ideological stance. One respondent, for example, highlighted their position against ‘consumer driven’ neoliberal forces:

[Sustainable development is] thinking about the future and making sure we can continue doing what we are doing indefinitely …corporate powers [should] take responsibility for their consumer driven self-perpetuating expenditure of the earth’s resources and take environmental destruction they are causing.

Whilst another used their response to support their ideological belief in global equality:

[Sustainable development is] the ability to balance the needs of today whilst not diminishing resources needed for future generations… resources that can be replenished in a manner that is fairly distributed across all the earth’s citizens.

As with critiques of BREEAM these arguments are captured in broader academic and policy literature concerning the relationship between sustainable development and corporate social responsibility (Welford 2013; Bazin & Ballet 2004; Kolk & van Tulder 2010) and the idea of sustainable development as global equity (WCED 1987; Haughton 1999b; Agyeman & Evans 2003). However, unlike critiques of BREEAM these arguments seem to reflect personal rather than professional belief systems.

***Sustainable development without normative definitions***

The above examples show how a number of respondents have adapted normative definitions of sustainable development to achieve very specific objectives: to valorise professional roles or to support professional critiques and personal beliefs. Importantly the data suggests that these same objectives are visible in all definitions.

The 19 respondents whose definitions of sustainable development showed no obvious links to the two normative definitions were spread across professional roles. This group included many of the site-based professions in the sample such as site-based quantity surveyors, estimators, project managers and site managers. The definitions offered by these actors cover a number of interests including self-sufficiency, life-cycle costs, material selection and labour selection. Whilst these definitions are not part of the two normative definitions set out in the Brundtland report, they are captured in the subsequent Agenda 21 and Habitat II Agenda. This seems to imply that the shift towards a construction orientated approach within the later UN summits helped engage a much broader range of actors from this sector, especially those operating in site-focused roles.

As in the first group of actors, the definitions offered by these 19 respondents also related to their respective roles in the building industry. One quantity surveyor, for example, defined sustainable development as the,

Use of materials / products derived via a self-sufficient process … an element of lasting effect namely, sourced and utilised once up to the end of its natural life, then recycled and re-used

Whilst a site-manager defined the concept as, ‘[the] use of local labour and contractors/ operatives [should also] be in conjunction with locally sourced materials where possible’.

These quotations show that, whilst these actors developed their definitions from Agenda 21 rather than the more commonly used normative definitions in the Brundtland report they still used these elements to valorise their respective roles in the construction process, namely the intelligent sourcing and utilisation of materials and labour. Several respondents within this smaller group of actors also defined sustainable to support a professional critique of BREEAM. These findings suggest that, whilst these two normative definitions have had a varying degree of success in their ability to capture the imagination of different actors working on the same or similar projects in the building industry, all such actors construct their own definitions to satisfy the same aims: to reinforce and valorise their professional role or their individual views.

**Conclusions, limitations and opportunities for future research**

This study has considered how the two normative definitions of sustainable development set out in the 1987 Brundtland report have influenced the way a network of professional actors from the building industry define the concept. This final section of the paper is constructed into three parts. Firstly, it sets out the principle findings from the study as a contribution to the literature and the implications this might have on future research in the field. Secondly, it considers how these findings might be used in policy development as well as construction practice and education. Thirdly, it identifies the principle limitations of the study and opportunities for addressing these limitations through further research.

***Implications for research***

*The role played by normative definitions*

A review of academic literature shows that the normative definitions within in the 1987 Brundtland report are used as the basis for most conceptual frameworks of sustainable development. The findings from this study suggest that these normative definitions are also used by most professional actors as the basis for developing their own, individual definitions. The data also suggests that these definitions resonate most strongly with actors working in design-based roles or roles in the construction process with a strong relationship with the design process. Actors working in site-based roles seemed to place greater emphasis on the sector-specific considerations identified in Agenda 21 and Habitat II which include material selection, recycling, lifecycle analysis and cost analysis. This reinforces the arguments presented by groups such as the CIB who have looked to develop conceptual frameworks that engage specifically with the construction sector. These results reflect a deeper division within the construction industry between designers and contractors that may reduce the team’s capacity to form effective and timely decisions. Future sustainable development policy must respond to this division if it is to ensure effective collaboration across the sector as a whole. This division and opportunities for addressing it through policy development should be explored in future research.

*The role played by academic concepts and ideals*

Data analysis has identified links between the concepts and ideals used to develop conceptual frameworks in academic literature and the definitions developed by professional actors. As in academic literature, several respondents framed their definition of sustainable development around a personal ideological belief in equity and an ideological critique against neo-liberalism. This finding may suggest that broader discourses used in academic debates about sustainable development (Redclift 2005; Haughton 1999a; Hopwood et al. 2005) have filtered into individual, professional definitions. The extent of this link and its impacts are not clear from the study and would need to be explored in future research.

*The role played by professional practice and an individual’s outlook*

The most significant finding from this study relates to the role played by professional practice. The data suggests that normative definitions are only absorbed into professional practice where they can support an individual’s professional role by valorising the specific actions undertaken by that role, or by supporting broader professional critiques of current practice. This finding has implications for the agenda driving policymaking and academic research aimed at ‘pin(ning the concepts) down ….’ to a set of characteristics that could be unequivocally posited and would be understood in the same way by all readers’ (Markusen, 1999: 703), and the suggestion that such universal definitions will then drive collective action (Christen and Schmidt, 2012: 400).

These results present a challenge to this agenda. It suggests that research might be better redirected away from the idea of consensus (Hillier 2003) and towards academic arguments emphasising the context dependent and pragmatic use of policy concepts (Shaw & Sykes 2004; Abrahams 2014) as well as the role played by an individual’s unique outlook and worldview (Giddings et al. 2002). This highlights a new direction for policymaking in which divisions within and across different sectors are not removed through the introduction of a universal definition applicable to all, but by encouraging actors to find ways to appreciate and operate with a range of role and context-specific definitions. Further research is needed to explore this agenda in more detail and to understand how it relates to the widely accepted position that policy should be used to drive towards collective action.

***Implications for policy development, construction practice / education.***

These findings have two implications for policy development. Firstly, the findings suggest that policy should acknowledge that sustainable development cannot be defined using a singular definition applicable to all actors operating in all sectors. This should be reflected in the way policy is worded but also in the design of tools used to measure the effectiveness of practice against such policies (such as BREEAM).

Secondly, this research places greater demands on policymakers to reflect upon their own, individual definitions of sustainable development. Do policy-makers also use normative definitions of sustainable development to respond to their own ideals and in ways that valorise their role in the policy development process? If so, one must ask whether different role-specific definitions can be afforded varying levels of importance, and how one justifies this hierarchy.

These findings also introduce new educational opportunities for the construction industry. Building on this study, one can envisage a series of initiatives aimed at encouraging professional actors in design and site-based roles to discuss their different understandings of the concept. A greater awareness of these differences may improve the efficiency of the design, procurement and construction process.

***Limitations of the study***

The following text identifies the limitations of the study and opportunities for further research aimed at addressing these limitations.

1. *Data generation methods.* All data generation methods contain a number of strengths and weaknesses. The principle limitation of a questionnaire is that the questions can be confusing or leading. Whilst the use of open-ended questions helps to reduce such risks, they are not removed entirely. The use of a mixed method approach can help reduce these risks further (Tashakkori & Teddlie 2003). Tashakkori and Teddlie (2003) presents two possibilities for developing a mixed method strategy. The first, ‘intramethod mixing’, uses two methods within the same category to draw out different findings. In this case, the open-ended questionnaire used in this study could be followed by a closed questionnaire to refine and validate the findings identified in the study. The second, named ‘intermethod mixing’, uses two or more methods from different categories. In this case, the open-ended questionnaire used in this study would be followed by a series of in-depth interviews to explore and refine the points raised in their responses. These two strategies would achieve different aims: to test the researcher’s interpretation of the responses and to explore these responses in greater depth. Both options offer new opportunities for future research.
2. *Sample selection*. As noted in the methods section of the paper, the focus on a single network of actors centred on the architect introduced selection bias into the sample. Future research should address this bias by identifying a further sample of actors operating in other professional networks. These further networks should centre on other actors, preferably actors operating in a site-based role rather than a design-based role. This collection of samples should be treated as a multi-case study to test, refine and revise the findings offered by this study.

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