

MANAGING SUSTAINABILITY THROUGH DECISION PROCESSES: THE INFLUENCE OF VALUES AND FRAMES

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Delivering projects to minimum requirements in the UK construction industry can come at the expense of longer-term sustainability goals and unseen impacts. Without measurement, such trade-offs often remain unaccounted for. Therefore, managing sustainability becomes a significant challenge, with subsequent downgrading to a 'box-ticking' exercise—itself a process-orientated procedure with little attention to broader project impacts or end conditions. A more direct and holistic approach to understanding and later influencing sustainability in design decision making is to research the values and problem framing which occurs in early practitioner-client interactions. By reinterpreting underlying processes in human decision-making for architectural sustainability, key themes and sub-processes can be transparently examined, thus facilitating their engagement and enabling. Early findings suggest that reciprocal influences of human values and decision-problem framing play a fundamental role in shaping sustainability decision processes. Explicitly and implicitly, practitioners appear to gather and evaluate interpersonal and values-orientated information, on which they base assessments of a client, their position on sustainability, and its flexibility. Such intuitive analyses provide practitioners with beneficial psychosocial heuristics to approach and advance sustainability issues. These 'indicators' provided guidance on using situation-appropriate communication frames to achieve particular results. Thus, values engagements and influences, on and in conjunction with problem-frames, structure and guide sustainable design decision processes. Values and communication frames appear reciprocally influenced and self-reinforced, amounting to structural psychosocial drivers, or barriers, of sustainability.

Keywords: decision-making, human values, stakeholder engagement, sustainability management.

INTRODUCTION

Sustainability in the UK construction industry is well received; building designers and construction professionals are understood to be well-versed in practical processes and technological solutions. However, many projects only deliver minimum requirements, frequently at the expense of longer-term sustainability goals and unseen impacts (Williams and Dair 2007, Dowson *et al.* 2012). Currently, these trade-offs are not specifically accounted for because they either cannot be measured or there is little willingness to measure them. Sunk costs and indirect impacts are notoriously challenging to disaggregate, and cost versus value trade-offs are established problems (Mills 2013). This scope of trade-offs is not currently measured in sustainable building assessment systems, nor are they effectively addressed in regulations in a broad, holistic context commensurate with c21st thinking (Moe 2007).

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Managing sustainability therefore has become a significant challenge, leading to its subsequent downgrading to a 'box-ticking' exercise in which points are given to seemingly useful measures and assessed as a process-orientated procedure with little attention to broader project impacts or end conditions. This work focuses on the missed opportunity to obtain a measure of the degree of sustainability of a project at a very different stage of the process—the initial practitioner-client interaction stages. It is in these early stages that the future agreed project is framed, with that framing being formed by contributions from both parties. Decision-making later follows broadly from that framing and may become less susceptible to significant change if based on stronger foundations. The human interactions occurring in this early, critical phase might be shown to be crucial to subsequent pathways and outcomes, which are examined in detail via in-depth interviews at the individual level. These fundamental human interactions and influences are almost entirely overlooked in sustainable design decision-making, particularly the initial interpersonal exchanges that set the character of and outlook for sustainability. Yet research in sustainability science and environmental sustainability suggest that values and frames are key fulcra in human psychosocial processes involved in bigger-than-self issues, including the long-term and unseen impacts from building design (Arvai *et al* 2012, Darnton 2008, Crompton 2010, Chilton *et al.* 2012).

The two questions addressed in this research are closely interlinked. What influences in early sustainable design decision processes are the result of human interactions? What are the influences of human values and problem framing in sustainable design decision processes? The aim of this research therefore is to investigate missing links in human psychosocial dimensions of sustainable design decision processes. Here, advances can be made to promote the sustainability agenda at an early and fundamental stage of the procurement process. These links are missing because they have been investigated insufficiently and are not leveraged in current practice.

The objective of the first phase of this three-phased research project investigates the variables influencing sustainable design decision processes at an individual level, by interviewing practitioners in-depth about their early practitioner-client interactions regarding sustainability. This paper reports on the initial findings of the first phase interviews. Phases 2-3 later will involve further interviews, focus-group workshops, and surveys with different companies to examine first interpersonal and then group-based influences of values on decision problem framing. This approach is intended to expand the sustainability debate by recognising the dynamic, complex, and multiple human variables implicit in everyday sustainable design decision processes. If found in Phase 1, the following phases will connect construction and design management research to literatures in values and framing for sustainability.

This is important because examining the human, psychosocial processes and influences in sustainability provide a new approach to sustainability, placing the individual in the context of the social; the obvious immediate in the context of unseen consequences and impacts; and smaller decisions in the context of larger impacts. This kind of approach is alluded to by authors advocating innovation and broader thinking for sustainability (see e.g. Moe 2007, Hoffman and Henn 2008, Brand 2004).

LITERATURE REVIEW

Increasingly since 2000, researchers have recognised the importance of incorporating social dimensions in generating solutions to sustainability issues in architecture (Brand 2004, Guy and Moore 2004, Cole 2000, Guy and Shove 2000). This has

occurred alongside recognition of the influence and importance of underlying inter- and intra-personal drivers and barriers arising from human values, beliefs and norms; motivations, opportunities and abilities; and other characterisations (Darnton 2008, Guy 2006, Henry and Dietz 2012, Schweber and Leiringer 2012). Intricate, compound, scale- and time-varying ecological, social, political, and economic conditions influence human sustainability, whereby the “*processes of decision-making directly affect the sustainability of their outcomes*” (Adger and Jordan 2009: 6). Therefore, more holistic approaches to decision-making, and setting the stage with better problem-framing, can begin to address multi-scalar and complex influences on sustainability decision-making (Haughton and McGranahan 2006). Holistic approaches to decision-making in design for sustainability that combine ‘small everyday’ with ‘large planned’ strategic decisions can consciously, and unconsciously, shape the broader impacts of architecture and urban sustainability (Haughton and McGranahan 2006). Moreover, the scale and domain in decision planning is a critical dimension to recognising the full scope of built environment influence and impact (du Plessis 2011, du Plessis and Cole 2011, Guy and Marvin 2001, Brand 2004, Kibert *et al.* 2006). This is particularly relevant because certain processes in sustainability “*can be more readily observed at some scales than others*” and impacts can be simultaneously direct and indirect (Alcamo *et al.* 2003).

Decision-making is a complex cognitive process influenced by a variety of interacting factors from multiple sources frequently beyond conscious awareness. Facts, evidence, and information only play partial roles in decision-making practices, where human emotions, beliefs, and values present significant influences at both individual and cultural levels (e.g. Arvai *et al.* 2012, Chilton *et al.* 2012, Crompton 2010, 2013, Darnton 2008). Socio-cultural norms, shared values, individual beliefs, attitudes, values, and emotions are all very closely linked and influence decision processes (Crompton 2010, Darnton 2008, Stern 2000, Dietz *et al.* 1998).

Considerable research suggests that values and frames are key leverage points in human psychosocial processes involved in bigger-than-self issues, such as the long-term and unseen impacts in building design (e.g. Arvai *et al.* 2012, Darnton 2008, Crompton 2010, Chilton *et al.* 2012). This potentially avoids making easily-overturned gains achieved through financial incentives or selective provision of information (Kollmuss and Agyeman 2002). Recent research has shown how the recognition of human values is emerging in ‘soft’ project management for construction sustainability that seeks new routes for value creation through better engagement with people in holistic, open, and meaningful ways (Mills 2013, Novak 2013, Thomson *et al.* 2003).

Values are fundamental, underlying drivers of motivations and behaviour, signifying what is important to people (Schwartz 2009). As Cheng and Fleischmann (2010: 1) summarise, “*values are a unique psychological construct that are prominent antecedents to decision-making and behaviour at the individual and societal levels of analysis.*” Values are important to managing sustainability based on three principal facets; they are: an identifiable variable in psychosocial processes; measureable; have shared meanings across cultures (c.f. Stern *et al.* 1998, Dietz *et al.* 1998, Oreg and Katz-Gerro 2006, Schwartz 2011, Harder *et al.* 2014, Hoover and Harder 2015, etc.).

In addition, values are also closely connected with how people make sense of the world: “*...one way this connection manifests itself is through frames. Frames in general are both mental structures that order our ideas; and communicative tools that*

evoked these structures and shape our perceptions and interpretations over time (Holmes et al. 2011: 36).” Various levels of ‘framed ideas’ or ‘framing contexts’ include snap-shots, broader perspectives, and entire mind-sets. Value judgements, as assessments of value or worth, can be considered a type frame encircling what is and is not important, thereby reflecting the values of the ‘framer.’ As Myers (2010: 12) asserts, “*the label [or frame] reflects the judgment.*”

Framing in decision-making is a heuristic or interpretative mechanism that provides a mental representation of the decision-problem that identifies the available options for an issue under consideration (Beresford and Sloper 2008, among others). Problem-framing is a key factor in decision processes, arising as a resultant sub-set of values and broader frames in a reciprocal and mutually influential relationship (Robbins et al. 2008, Holmes et al. 2011). The way in which options are framed, as well as the order they are presented, have significant impacts on the outcomes of decisions, which can also produce results opposite of intentions (Darnton 2008, Jones et al. 2012). Beamish and Biggart (2010: 2) discovered that “*social heuristics—collectively constructed and maintained interpretive decision making frames—influence economic decision making practices and material outcomes,*” having led to at least one case of failed innovation in large-scale commercial construction. Together, values and frames can be employed in sustainability “*...toward systemic change that is less susceptible to variations in behaviour and ultimately reinforcing the more consistent, underlying principles or standards from which our behaviour derives*” (Holmes et al. 2011).

The literature above indicates that values and problem framing are crucial factors for structuring decision making processes, yet they have not been explicitly studied in design management interactions; the work described here examines that area.

RESEARCH DESIGN AND METHODOLOGY

The Phase 1 research has been designed, planned, and iteratively fine-tuned based on emerging results and findings from field research and literature in constant comparison. It takes a case-based grounded approach, involving key individuals and groups of decision-makers from building design companies and client bodies. The domain of study is the interpersonal practices of individuals in groups of two or more, seen from the perspective of building designers, and how those individuals communicate, interact, and influence sustainable design decisions. A case-based approach allows for each organisation (‘horizontally’) and project (‘vertically’) to be naturally identified as a case or ‘category of analysis’ (Yin 2009: 12).

Utilising a grounded analytical approach provided the opportunity to collect and analyse the data based on rigorous, linked recording, and examination methods capable of providing records of developments, or ‘chains of evidence’ also used in case study methods (Yin 2009: 41). By constantly comparing collected data against literature, against conceptual and theoretical understandings, this approach allowed building up an increasingly broad perspective towards explanations grounded in findings yet related to literature. Through coding and categorising the data according to concepts and themes as appropriate descriptions for the apprehended phenomena, the data was coded and assembled directly from the different groupings of participants and their experiences as expressed in their responses (Strauss and Corbin 1994, Creswell 2003). As Charmaz (2011: 501) asserts, “*data collection and analysis reciprocally inform and shape each other through an emergent iterative process.*”

DATA COLLECTION AND ANALYSIS

For the Phase 1 interview process, participants have been chosen based on having a minimum of 10 years professional practice experience with sustainability issues in building design were initially identified in accordance with a set of detailed procedures—ten were invited through the lead authors' professional network. This was based first on length of experience in years, second on experience in varied sectors, third on availability and accessibility in a relatively short timeframe. With an anticipated recruitment response rate at 50% (Baruch and Holtom, 2008), it was felt that a 60% response for the first of three phases was acceptable. Four architects, one technologist, and one design engineer were interviewed from four different organisations. A series of open-ended questions were based on the five-part objective and selected by their ability to capture key underlying processes in approaching, engaging, framing, delivering, and 'futuring' sustainability. This was bounded in such a way as to capture key exchanges, conditions, and constructs at the spaces where people interact with and influence sustainability in decision processes. The interviews discussed issues about engaging key stakeholders in decision processes for sustainable design, including such matters as raising sustainability topics, committing to sustainable solutions, making or accepting changes affecting project sustainability.

First, interview transcripts were broadly reviewed, then closely analysed, and distilled into a series of statements and highlights of key points, prevailing threads, and observations. Then transcripts were 'open' coded and categorised with an 'open frame' in constant comparison between coding, memos, and transcripts, in which phenomena arising were classified purely by their content and meaning rather than assigned any predetermined concepts. Thus, analysis naturally extracted codes that were bounded by the questions themselves, thereby inherently limiting the range of codes arising. These were rationalised and refined into several explanatory codes and then categorised according to predominant topics that arose. Responses naturally fell into six categories: engagement, approach, drivers/influences, actions, framing, values, (participant) observations. All analyses were cross-referenced into an analysis matrix for crosschecking. To identify specific influences of values and frames, the transcripts and analysis matrix were re-examined with a 'values lens' and a 'frames lens' to draw out relationships and influences from these perspectives (Harder *et al.* 2014). These were separately re-coded into frames used by practitioners to represent sustainability, and 'value statements', giving rise to several subcategories of values and framing. Codes and categories were re-compared with corresponding texts for consistency.

Results identify not only that values and problem-framing influence decision processes, but also that these influences vary in scope and magnitude depending on the value a practitioner places on sustainability, and the practice environment, in relation to other relevant factors. These include practitioner and practice value-systems, individual(s) with whom they interact, the project itself, and relevant conditions of the prevailing environment, whether implicit or explicit. The way practitioners progress sustainability appears to be closely associated with their 'value-system', influenced by their experience, company 'focus' and value-system. Reflection on these interviews, in constant comparison with the literature, has revealed a structure of key design decision processes and influences.

From the interviews, it appears unanimous that decisions about 'levels of sustainability' are raised by practitioners with their clients almost from 'day one' because of their complexity and cost implications, necessitating early commitment. Practitioners engaged stakeholders with sustainability issues 'where they are at'—they

endeavour to discover what their clients are ‘like’ and are ‘willing to accept’ in terms of functionality, aesthetics, and sustainability. As one practitioner advised: *“when I’m first meeting [a stakeholder], I’m trying to gain an impression of what they’re like, what they might think like in all sorts of ways. ...if somebody doesn’t like me, they’re not likely to engage [with] us.”* It seems regardless of background experience or practice values, these participants pursue client boundaries, attempting to advance them towards improved sustainability.

In these initial ‘values engagements’, it appears that intuitive judgements of ‘what a client is like’ are made alongside more overt enquiries on issues of importance such as design and sustainability interests, ‘likes/dislikes’, motives and drivers. During appointment and briefing processes, practitioners examined new client priorities and formulated both explicit and intuitive assessments of such issues. Value judgements seemed to be made about the ‘type of person’ their client is—taking the form of social status, wealth, political association, profession/career, personal interests, etc. These judgements provided practitioners with beneficial psychosocial clues to approach and advance sustainability issues. Practitioners extracted and evaluated interpersonal and values-orientated information, on which they based assessments of clients, their position on sustainability, and its flexibility. These ‘indicators’ provided guidance on using situation-appropriate communication frames to achieve particular results.

Responses converged to suggest that sustainability commitment is treated initially as a boundary concept, and then a binary concept by these participants: once an estimate of a stakeholder’s boundaries is made on a spectrum of interest-versus-disinterest (which is amenable to adjustment), sustainability appears to be treated as a binary concept of accept-reject, us-them, etc. One participant explained, *“if you are starting to get some interest, you can go quite a long way down this particular line.”* The issue at hand is how far; *“that’ll very much depend on what you as an individual want; I come with my sustainability agenda and ideas, but at the end of the day, you’re the client, [...] you’re the one who says ‘well, I like the idea of [it, but] that’s not a big priority’.”*

Where the views of practitioners began to diverge can be represented by two ‘spectra’ of practitioner experience emerging from interviews: design-led and commercial-led. It became possible to detect this spectrum clearly after the analysis of participant’s use of framing and was supported by further references in their values-engagements and values-statements. Most importantly, values-engagements appear to have occurred both explicitly and implicitly, and values-statements were utilised through various forms of assessment in decision processes. One way this manifested was how sustainability decision-problems were framed and formulated—thus setting the decision-making stage.

Framing of sustainability measures appeared in the interview transcripts in a multiplicity of terms: active or passive, regulations, markets, costs, value, responsibility, ethics, life-cycle, usability, operation, maintenance, etc. The fact that one design-led practitioner acknowledges engaging with commercial clients very differently than private or public sector clients suggests that the selection of frames is multifaceted and influenced by audience, skill, experience, and values. With commercial-led practitioners, the framing of sustainability appeared heavily influenced by: cost, regulations, and usability or operations, but also to varying extents by practitioners ‘pushing the boundaries’ with their clients and regulatory authorities. This was derived from conversations with at least three different practitioners, one of whom advised these were prevailing tendencies. However, with

design-led participants it seemed the reverse: sustainability was driven by practitioner and sometimes client, with either or both pushing the boundaries; regulations represented bare minimum, lowest thresholds rather than drivers of achievement, although cost remained central. One practitioner explained how this was the case with two different clients, and appeared to intimate through body language that this was the norm in their practice. Hence, practitioners appeared to develop experience-based biases that remained present between projects. These 'biases' then informed how they framed sustainability problems to subsequent clients and stakeholders. Drawing on value judgements to inform the appropriate use of frames, the values of both practitioner and client appear to have influenced the framing of decision-problems used by practitioners, which in turn influenced decision processes. Thus, it was possible to discern that: a) framing was influenced by values, b) framing was chosen based on experience of which frames are found to speak to certain clients, and c) framing and values operated in an iterative, self-reinforcing combination.

Interestingly, it seems that the overwhelming majority of participants appeared to broadly engage with sustainability issues for their own, different reasons: some commercial; some an ethical 'altruism' and personal commitment; one an almost paternal-community spirit of responsibility. The majority of commercial-led practitioners favoured strongly promoting sustainability, but in a pragmatic manner commensurate with the requirements of their client base. This might suggest that the practitioners' individual approach does not necessarily correspond completely with the practice approach. Furthermore, the two rough groupings of participants seemed to report almost polar approaches. From the commercial-led: a 'push away from the bottom baseline', encouraging clients away from the 'only if necessary' mind-set, and client-driven cost-centred approaches. From the design-led: 'pull toward the top performance', 'shared enthusiasm', 'lead-by-example' approaches. Broadly speaking, the commercial-led practitioners' self-reporting of the 'practice environments' appear aligned more closely with (Schwartz's) extrinsic values, alongside lesser-activated intrinsic values. Design-led practice environments appear aligned with intrinsic values, whilst retaining an explicit awareness of extrinsic values-related issues.

From this group of participants, it appears plausible to suggest that values of the practitioner are reflected in three psycho-social constructs. First, the 'organisational focus' they promote (design-led or commercial-led in these cases). Second, the 'types of clients' they prefer to engage with (commercially or environmentally orientated, etc.). Third, the extent to which practitioners will continue promoting sustainability issues when resistance and barriers are encountered. Furthermore, it is also reasonable to conclude that a) the conditions of practice, combined with practitioner and client values, and the problem frames these two perpetuate can provide inhospitable conditions for sustainability, and b) that these conditions amount to cultural structural barriers to sustainability. Profit-driven extrinsic values and the stakes involved in many projects appear to allow limited scope for practitioners to engage disinclined stakeholders' intrinsic values considered more aligned with pro-environmental behaviour and support for sustainability previously demonstrated in literature.

DISCUSSION OF FINDINGS AND CONCLUSION

Decision influence processes seemed to begin during pre-engagement interactions between client and practitioner, even before an appointment was made. Beyond baseline legal regulations, the advancement of sustainability via decision processes appeared to be influenced by values and frames among this participant group. Through the practices of communicating with clients, practitioners appeared to

implicitly and explicitly elicit value statements from them and use these as heuristics and indicators to guide how to interact with them on sustainability issues, and how far and how hard to press. Intuitive judgements and cultural stereotypes of client personality and ‘positioning’ served as proxies for personality assessments and provide practitioners with heuristics with which to select appropriate methods and tactics for client sustainability engagement. In addition to values, practitioner awareness, experience, and knowledge, the heuristics of judgements, stereotypes, and personality assessments informed their choice of frames. These heuristics were used as shorthand interpretation mechanisms to influence sustainable design decision processes. They provided an interpretation method with which practitioners evaluated, and then promoted or relegated, options for engaging clients with certain frames of reference, or certain approaches to sustainability, i.e. commercial frames, energy-savings, ethical responsibility, etc. These different frames, and the values that influence them and their selection, appeared to be activated or employed either in combination or separately at different times. This occurred both intuitively and consciously in: a) implicit psychosocial interpretative and analytical mechanisms developed over time and b) explicit engagement processes.

Values engagement, elicitation of values statements, and use of interpretative mechanisms happened at an almost sub-conscious level and appeared to have gone unrecognised by the practitioners as a result. Whilst such implicit, intuitive judgements can be dangerous in the formation of false impressions and erroneous analyses, their heuristics seem to have proven useful for these experienced practitioners. However, such intangible but critically important constructs seem entirely underutilised as a resource with which to enhance performance in briefing and design for sustainable construction.

This research phase has captured certain values-influence processes, illuminating key, underlying sub-processes in sustainability decision-making, providing new insight into the conditions in which framing, values, and values engagement are relevant and useful, but under-appreciated. Responses have brought to light the subtle, nuanced, and highly individuated ways in which different practitioners approach stakeholders with sustainability issues. Given the complexity of influences, heuristics, and interrelationships, future work on this project will respond to the need to triangulate findings through further data from additional interviews, group values elicitations, and individual values surveys with design practitioners, clients, and project teams. Future work will also examine relationships in a terminal and instrumental values framework and relate them more directly to values, problem framing, and sustainability research in other fields.

REFERENCES

- Adger, W. N. and Jordan, A. 2009. *“Governing sustainability”*, Cambridge, Cambridge University Press.
- Alcama, J., and Bennett, E. M. 2003. *“Ecosystems and human well-being: A Framework for Assessment”*, Island Press Washington, DC.
- Arvai, J., Campbell-Arvai, V. and Steel, P. 2012. *“Decision-making for Sustainability: A Systematic Review”*. London, Ontario: Network for Business Sustainability.
- Baruch, Y., and Holtom, B. C. 2008. Survey response rate levels and trends in organizational research. *“Human Relations”*, **61**(8), 1139-1160.
- Beamish, T. and Biggart, N. 2010. *“Social Heuristics: Decision Making and Innovation in a Networked Production Market”*. SSRN Working Paper Series.

- Beresford, B. and Sloper, P. 2008. "Understanding the dynamics of decision-making and choice: A scoping study of key psychological theories". York, Soc. Pol. Res. Unit.
- Brand, R. 2004. Co-Evolution toward Sustainable Development: Neither Smart Technologies nor Heroic Choices. 3rd Global Conference, Ecological Justice and Global Citizenship: "Environments, Sustainability and Technologies". Copenhagen.
- Brand, R. 2010. Societal choices for sustainability - an evolutionary perspective. "International Journal of Sustainable Society", **2**, 1-16.
- Charmaz, K. 2011. "Grounded theory methods in social science research". In: Denzin, N. K. and Lincoln, Y. S. (eds.) The Sage handbook of qualitative research. Thousand Oaks, Sage Publishers, inc.
- Cheng, A.-S. and Fleischmann, K. R. 2010. Developing a meta-inventory of human values. "Proc. Am. Soc. Info. Sci. Tech.", **47**, 1-10.
- Chilton, P., Crompton, T., Kasser, T., Maio, G. and Nolan, A. 2012. "Communicating bigger-than-self problems to extrinsically-oriented audiences". WWF-UK, Godalming.
- Cole, R. J. 2000. Editorial: Cost and Value In Building Green. "Building Research and Information", **28**, 304-309.
- Cresswell, J. W. 2003. "Research design: Qualitative, quantitative, and mixed methods approaches", USA, Sage Publications, Inc.
- Crompton, T. 2010. "Common cause: the case for working with our cultural values". WWF.
- Crompton, T. 2013. Behaviour change. A dangerous distraction. Motivating Change. "Sustainable Design and Behaviour in the Built Environment", 111-126.
- Darnton, A. 2008. "Reference report: An overview of behaviour change models and their uses". In: DARNTON, A. (ed.) GSR Behaviour Change Knowledge Review.
- Dietz, T., Stern, P. and Guagnano, G. 1998. Social Structural and Social Psychological Bases of Environmental Concern. "Environment and Behavior", **30**, 450-471.
- Dowson, M., Poole, A., Harrison, D. and Susman, G. 2012. Domestic UK retrofit challenge: Barriers, incentives and current performance leading into the Green Deal. "Energy Policy", **50**, 294-305.
- du Plessis, C. 2011. Towards a regenerative paradigm for the built environment. "Building Research and Information", **40**, 7-22.
- du Plessis, C. and Cole, R. J. 2011. Motivating change: shifting the paradigm. "Building Research and Information", **39**, 436-449.
- Guy, S. 2006. Designing urban knowledge: competing perspectives on energy and buildings. "Environment and Planning C", **24**, 645.
- Guy, S. and Marvin, S. 2001. Constructing sustainable urban futures: from models to competing pathways. "Impact Assessment and Project Appraisal", **19**, 131-139.
- Guy, S. and Moore, S. A. 2004. "Sustainable Architectures", Taylor and Francis.
- Guy, S. and Shove, E. 2000. "The sociology of energy, buildings and the environment: Constructing knowledge, designing practice", Psychology Press.
- Harder, M., Velasco, I., Burford, G., Podger, D., Janoušková, S., Piggot, G. and Hoover, E. 2014. Reconceptualizing 'effectiveness' in environmental projects: Can we measure values-related achievements? "Journal of Environmental Management", **139**, 120-34.
- Haughton, G. and McGranahan, G. 2006. Editorial: Urban ecologies. "Environment and Urbanization", **18**, 3-8.

- Henry, A. D. and Dietz, T. 2012. Understanding Environmental Cognition. *“Organization and Environment”*, **25**, 238-258.
- Hoffman, A. J. and Henn, R. 2008. Overcoming the Social and Psychological Barriers to Green Building. *“Organisation and Environment”*, **21**, 390-419.
- Holmes, T., Blackmore, E., Hawkins, R. and Wakeford, T. 2011. *“The Common Cause Handbook”*. Machynlleth, Wales: Public Interest Research Centre Ltd.
- Hoover, E. and Harder, M. K. 2015. What lies beneath the surface? The hidden complexities of organizational change for sustainability in higher education. *“Journal of Cleaner Production”*. IN PRESS.
- Jones, C. R., Eiser, J. R. and Gamble, T. R. 2012. Assessing the impact of framing on the comparative favourability of nuclear power in the UK. *“Energy Policy”*, **41**, 451-465.
- Kibert, C. J., Thiele, L. and Peterson, A. 2006. *“The Ethics of Sustainability”*.
- Kollmuss, A. and Agyeman, J. 2002. Mind the Gap: Why do people act environmentally and what are the barriers to pro-environmental behavior? *“Environmental Education Research”*, **8**, 239-260.
- Mills, G. R. 2013. *“Values and value in design”*. PhD, Loughborough University.
- Moe, K. 2007. Compelling Yet Unreliable Theories of Sustainability. *“Journal of Architectural Education”*, **60**, 24-30.
- Myers, D. G. 2010. *“Social psychology”*, New York; McGraw-Hill Higher Education.
- Novak, V. M. 2013. *“Managing Sustainability Value in Design: A Systems Approach”*. PhD, Virginia Tech (Virginia Polytechnic Institute and State University).
- Oreg, S. and Katz-Gerro, T. 2006. Predicting Proenvironmental Behavior Cross-Nationally: Values, the Theory of Planned Behavior, and Value-Belief-Norm Theory. *“Environment and Behavior”*, **38**, 462-483.
- Robbins, S. , Cenzo, D. and Coulter, M. K. 2008. *“Fundamentals of Management: Essential Concepts and Applications”*, Upper Saddle River, NJ; Pearson Education Ltd
- Schwartz, S. H. 2009. Basic human values: An Overview. *“Sociologie”*, **42**, 249-288.
- Schwartz, S. H. 2011. Studying Values: Personal Adventure, Future Directions. *“Journal of Cross-Cultural Psychology”*, **42**, 307-319.
- Schweber, L. and Leiringer, R. 2012. Beyond the technical: a snapshot of energy and buildings research. *“Building Research and Information”*, **40**, 481-492.
- Stern, P. C. 2000. Toward a Coherent Theory of Environmentally Significant Behavior. *“Journal of Social Issues”*, **56**, 407-424.
- Stern, P. C., Dietz, T. and Guagnano, G. A. 1998. A Brief Inventory of Values. *“Educational and Psychological Measurement”*, **58**, 984-1001.
- Strauss, A. and Corbin, J. 1994. *“Grounded theory methodology”*. Handbook of qualitative research, 273-285.
- Thomson, D., Austin, S., Devine-Wright, H. and Mills, G. 2003. Managing value and quality in design. *“Building Research and Information”*, **31**, 334-345.
- Williams, K. and Dair, C. 2007. What is stopping sustainable building in England? Barriers experienced by stakeholders in delivering sustainable developments. *“Sustainable Development”*, **15**, 135-147.
- Yin, R. K. 2009. *“Case Study Research: Design and methods”*, USA, SAGE Publications, Inc.