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*Design to Thrive*

## Deciphering the code of 'sustainable' architecture; Exploring the discourse of PLEA 2014

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**Abstract:** Legislative pressures to quantify impacts of design decisions for energy conservation have driven intrinsic transformations in architectural design decision-making. Infiltration of 'sustainability' concepts within the profession, and migration of associated terminologies is hypothesized to have led to a corresponding transformation in the discourse employed by architects and academics. In this study, a discourse analysis of PLEA 2014 conference proceedings was performed, to explore what is meant by the term 'sustainable' architecture. Results reveal that discursive uses of the term 'sustainable' architecture are broadly contested. Associated meanings range from technocratic connotations seemingly synonymous with the term 'energy-efficient,' descriptions of 'sustainable' architecture as an elite class of buildings and characterizations of 'sustainable' as vernacular and holistic, amongst other discursive uses. It is further contended that the status of the word 'sustainable' in the architectural discourse is purposively broad-brushed and wide-ranging, mirroring the range of methods, tools and techniques available at the architect's disposal to fulfil commitment to the 'sustainable' cause. Nevertheless, this non-standardised, pluralist interpretation of 'sustainability' is what allows architects worldwide to create a rich tapestry of architectural heritage that not only responds to, but also weaves together aesthetical, technical, contextual and humanistic considerations.

**Keywords:** Sustainable architecture, discourse analysis, PLEA 2014

### Introduction

Mounting legislative pressures to quantify the impact of every design decision, largely for energy conservation purposes, have driven inherent adjustments to the architectural decision-making process, necessitating the introduction of quantitative measures of technical building performances against acceptable benchmarks (Sebastian, 2011). Use of the computer to "*rationalize, quantify and repeat*" (Barrow, 2004) performance assessments has been an instrumental driver of this change, as building performance assessments have allowed architects to realise more energy-efficient and sustainable design solutions, while providing comfortable internal conditions to users. In recognition of the necessity of arming architects with an appreciation of design performance assessments, many schools of architecture now offer specialized 'sustainable architecture' programs at both undergraduate and postgraduate levels.

Discourse analysts (e.g. Baxter, (2010) and Oak (2011)) contend that language is a socially-constructed system of symbols by which subjective realities are moulded and mediated. Orna-Montesinos (2012) states, "*the lexical choice of the ... professional is loaded with the epistemology of the professional.*" Infiltration of 'sustainability' concepts within the

architectural profession, and migration of associated terminologies is therefore hypothesized to have led to a corresponding transformation in the discourse, and an expansion of the architectural lexicon to incorporate sustainability-related epistemologies. Nevertheless, it is not possible to confirm such conjecture without performing a rigorous analysis of the discourse used in research publications focused on sustainable architecture. The purpose of this paper is to critically question what is meant by the term 'sustainable' when discussed within architectural discourses.

## **Research Methods**

### ***Passive and Low Energy Architecture (PLEA) 2014***

In this study, a discourse analysis of a sample of contributions selected from the conference proceedings of Passive and Low Energy Architecture (PLEA) 2014 ([www.plea2014.in](http://www.plea2014.in)) was performed. By organizing annual conferences for "*the development, discussion and diffusion*" of research in sustainable architecture and urban design fields, PLEA conferences serve as a unique forum for academics, architects and building industry professionals primarily concerned with sustainability in the built environment to present their ideas and all that is state-of-the-art in their respective areas. Conference proceedings were selected for analysis as conferences serve as key platforms allowing the convergence of experts from both academia and industry. By engaging in various levels of formal and informal dialogue with other professionals from across the world in a peer-to-peer setting, conferences serve as podia for the exchange of ideas leading to a gradual, epistemological knowledge construction. PLEA, in particular, was chosen first for being a well-recognised conference, and second, for availability of conference proceedings online (PLEA, 2017). In this case, 2014 proceedings were selected because, at the time of writing (starting March 2016), these the most recent; PLEA 2015 proceedings were not yet available online and the 2016 conference had not yet taken place.

### ***Discourse analysis; definition and approach***

Language is more than just a way of understanding, describing or communicating. It is also a vehicle for constructing alternate versions of the social milieu (Bryman, 2010). Whenever we attempt to convey a message, or describe people, places, objects or situations, we are inherently selecting from an available corpus of words and phrases to reconstruct a particular rendition of the world. Underlying this acknowledgement is further recognition that there are multiple versions of the world, and that through the linguistic choices that we make, "*we are establishing one version of the world in the face of competing versions*" (Gill, 2000).

To perform the discourse analysis, the author adopted an 'analytic mentality' (Potter 2007) to unravel discursive formations. "*Whenever, between objects, types of statements, concepts or thematic choices, one can define a regularity (an order, correlations, positions, functionings, transformations) we will say ... that we are dealing with a discursive formation*" (Foucault 1972). The author also followed Potter's (2004) recommendation of asking three key questions of the data while reading. These are (a) what does the discourse do? (b) How is this achieved through discursive constructions and formations? (c) What resources are used to be able to construct this particular rendition of the social world? A '*sceptical reading*' stance (Gill, 2000) was also espoused; in other words, questioning what **is not** being said as well as what **is** being said, to unravel hidden meanings. Transmitting a particular message in one way is concurrently an avoidance of saying something else.

Despite the known advantages of using qualitative data analysis software to deconstruct and ‘code’ textual data (as outlined in Jones (2007)), such computerized approaches are known to distance the researcher from the deep, rich qualitative data (Bassett, 2004). Given the need for a closer involvement and interaction with the texts, a manual ‘pen-and-paper’ approach to the analysis was preferred, to allow this researcher to gain deeper familiarity with the texts and document analytical impressions.

### ***Sampling and selection***

Proceedings of PLEA 2014 consist of 228 contributions in total. A sampling technique was therefore needed to select the most relevant publications, and construct a sample of papers that was suitable to allow the analysis to be performed. Non-probability purposive sampling was used to construct the sample of papers. As proceedings were in .pdf format, the ‘find’ function within Adobe Acrobat Reader was used to count the number of appearances of ‘sustain-,’ ‘sustainable’ and/or ‘sustainability’ in each contribution. A contribution was deemed suitable for analysis when at least one of these three words occurred at least ten times. This procedure resulted in the construction of a sample of 30 contributions from the PLEA 2014 proceedings (table 1). Given this relatively small sample size, coupled with the qualitative nature of the discourse analytic approach employed, no claims to generalization are being made from the results. Rather, the results are intended to illustrate the wide-ranging nature of the discursive uses of the word ‘sustainable’ in PLEA proceedings.

Table 1: Sampled contributions from the PLEA 2014 proceedings.

#	PAPER ID	Author(s)	Instances in text
1	2253	Bakshi, N. Vale, R. & Vale, B.	44
2	<b>2246</b>	<b>Lufkin, S. &amp; Rey, R.</b>	<b>13</b>
3	2546	Pandya, S. V. & Brotas, L.	10
4	<b>2222</b>	<b>Laprise, M., Lufkin, S. &amp; Rey, E.</b>	<b>28</b>
5	2280	Riera Perez, M. G., Rey, E. Liman, Ul, Roulet, Y. & Favris-Donzel, A.	10
6	<b>2260</b>	<b>Fumeaux, L. &amp; Rey, E.</b>	<b>10</b>
7	2715	Kos, J. R., Fiorentini, M., Cooper, P. & Miranda, F.	19
8	<b>2427</b>	<b>Li, W. &amp; NG, E.</b>	<b>47</b>
9	2620	Neves, S. O. & Amado, M.	12
10	<b>2679</b>	<b>Lee, K., Kim, S., Kim, S. &amp; Park, E. J.</b>	<b>10</b>
11	2234	Izadpanahi, P. & Elkadi, H.	77
12	<b>2674</b>	<b>Adenan, U., Rodrigues, L., Borsi, K. &amp; Kiamba, L.</b>	<b>10</b>
13	2773	Urness, C. & Kabre, C.	20
14	<b>2825</b>	<b>Poptani, H. &amp; Bandyopadhyay, A.</b>	<b>30</b>
15	2205	DeKay, M.	46
16	<b>2905</b>	<b>van den Dobbelsteen, A., Tillie, N., Broersma, S. &amp; Fremouw, M.</b>	<b>14</b>
17	2264	Chi, E. & Ng, E.	22
18	<b>2599</b>	<b>Almusaed, M. &amp; Almssad, A.</b>	<b>12</b>
19	2903	Fernandes, J., Mateus, R., Braganca, L., da Silva, J. C. & Silva, S.	11
20	<b>2195</b>	<b>Adolphe, L., Rousval, B., Martins, E., Bonhomme, M. &amp; Dubois, C.</b>	<b>24</b>
21	2418	Dave, M., Bilbao, J., Dickson, J., Watson, B., Prasad, D. & Sproul, A.	12
22	<b>2299</b>	<b>Yimin, S. &amp; Hui, X.</b>	<b>12</b>
23	2571	Correa, S., R. M, Turkienicz, B. & Poehls, L. B.	12
24	<b>2456</b>	<b>Mehibel, M., Pitts, A. &amp; Gao, Y.</b>	<b>16</b>
25	2797	Janssens, B.	55
26	<b>2231</b>	<b>Janssens, B.</b>	<b>73</b>
27	2161	Widera, B.	11
28	<b>2756</b>	<b>Havinga, L. C., Colenbrander, B. J. F. &amp; Schellen, H. L.</b>	<b>54</b>
29	2874	Castano, A. G. & Pineda, E.	34
30	<b>2459</b>	<b>Tereci, A. &amp; Erhart, D. K.</b>	<b>14</b>

## Results and discussion

### ***Defining 'sustainable'***

The terms '*sustainable*' and/or '*sustainability*' appear early in the papers analysed; often in the initial sentences of the abstract (e.g. in paper IDs 2195, 2205, 2222, 2231, 2234 and 2260) or in the introductory section of the paper (e.g. in paper IDs 2161, 2246, 2280, 2418). While various topics are covered, the same definition is commonly used. This is the widely-quoted 1987 Brundtland Commission report definition, focusing on the planet's carrying capacity and preservation of resources without impinging on those available to future generations. Often, this is not a paraphrased reference; but an inter-textual manifestation; "*the explicit presence of one text in another*" (Jain-guo, 2012). Common reference to this definition creates a common language; bridging between various sub-disciplines of built environment research. Shared use of the definition across a multiplicity of built environment research sub-domains aligns with Guy (2005)'s description of the "*interpretive flexibility of sustainability*." This flexibility is likely used to construct an equally malleable and open-ended discourse, of a contested nature.

Underlying this definition is the holistic principle dealing with 'triple bottom line,' integrating environmental, economic and social spheres. These three spheres are often depicted by three equal-sized and interlocking circles; implying equal-weighted epistemological status of the three silos. In some cases, equal status of the three spheres is mirrored in explanations of sustainability in PLEA 2014 works, for example:

*"In essence, the Minnesota Experimental City embodied **the principles of social, economic and environmental sustainability**"* – Paper ID. 2773.

*"Several tools consider the fact that the built environment is **affected by economic, social and environmental aspects**, pursuing a holistic and sustainable vision of building projects"* – Paper ID. 2234.

However, in other texts, definitions of sustainability are subsumed by an equally-weighted relationship between the three spheres. The imperative of 'energy-efficiency' seems to dominate; as greater attention is dedicated to the environmental protection and economic development, while the social dimension of sustainability remains the least explored sphere.

### ***Survivalist discourse***

Another discursive formation unravelled is what Demirel-Özer (2014) describes as the '*survivalist discourse*.' The discourse is dominated by popular acceptance of the planet's limited carrying capacity. A pessimistic picture of the natural earth, as a vulnerable vehicle for human habitation and survival, is painted. The built environment is subversively regarded as parasitic; departing from fears that the earth is doomed as a consequence of rapid post-industrialism. Central to the survivalist discourse are claims about the scarcity of energy and the urgent need for resource conservation for human survival. This is depicted in paper ID. 2905; "*sustainable development will become a question of climate adaptation and mitigation on the one hand, and the lasting availability of resources on the other. Of these resources, after the basic needs for human survival – oxygen, drinking water and food – energy is most quintessential element for human society.*" Correspondingly, the necessary equilibrium between resource conservation and human comfort is often described as a 'battle.' These rhetorical escalations are intended to incite a sense of fear and urgency.

### ***Sustainable architecture as part of a wider geo-political discourse***

Discussions on sustainability in the analysed papers appear to be intertwined within a wider, international, and politically charged discourse of environmentalism. One way this is manifested is by rooting the agenda for sustainable architecture within political impetuses. This constitutes reference to international political bodies, inciting the notion that sustainability is of greater importance than predicated at a local scale. For example, authors of paper ID. 2253 cite the Kyoto Protocol, Agenda 21 and the 1992 Earth Summit in the introductory section of their text. In paper 2679, a report by the Intergovernmental Panel on Climate Change (IPCC), estimating that by *"2030 the building sector will have the highest potential for reducing CO<sub>2</sub> emissions,"* cited.

Another manifestation that appears is an 'East versus West;' 'developing versus developed' countries' dichotomy; which are *"portrayed as ... two distinct and unbridgeable worldviews"* (Guy, 2005). Work originating from developing countries (e.g. paper 2456 and 2903) tend to regard sustainability in architecture from the traditional, even vernacular lens; holistically reflecting social, economic and cultural contextual practices. Conversely, in works originating from developed nations, 'sustainability' tends to translate into high-tech and/or technocratic architectural vocabularies (e.g. paper 2715). This dichotomy is even acknowledged by author(s) of paper 2253 who state that in *"the Eastern model, there is a shift...towards incorporating more parameters for sustainable behaviour, education and food self-sufficiency. The Western model shows an increasing reliance on technology."* This finding aligns with Edwards' (2001) statement; *"the spiritual approach to green [sustainable] design is found in the underdeveloped world, and the low-energy, high-material approach [is found] in the developed world."*

#### ***Vernacular and traditional architecture discourse***

In this discourse, the need for sustainable architecture is initially presented by defining the historical, geographical and cultural parameters that the architecture responds to, through detailed descriptions of context. Identity and locality are conveyed in discussions of traditional construction techniques, reliance on local materials and the local community's participation in building design and construction. Departing from these origins, two contrasting discursive routes are detectable. The first is an outward resistance to globalization predicating that, to be sustainable, architecture must *"move away from the universal and technologically based design methodologies, as these often fail to coincide with the cultural values of a particular place or people"* (Guy and Farmer, 2001). On the flipside, however, what traditional architecture can learn and adapt from technocratic methodologies of the modern, developed world is also detectable. An example is visible in the following excerpt from paper 2253; *"this study is a comparison of sustainable design practice in India ... to identify if, and how, India might learn from the successes and failures of developed countries."*

#### ***Technocratic discourse of sustainable architecture***

This rhetoric amplifies the status of technology and determinism. It is underlined that technology, and belief in its quantitative authority, promise attainment of higher degrees of sustainability. This discourse departs from positivist and post-positivist philosophies, where it is believed that objective analyses and rationality are trustworthy approaches to arrive at technological solutions, to rectify environmental ills. In terms of architectural vocabularies, this rhetoric is embodied in a range of technical innovations, including kinetic facades, renewable energy solutions, double skin roofs and walls, energy-efficient materials and

lighting, etc. This view aligns with *“the machine mentality of our culture,”* whereby *“no matter what the problem, technology is [always] the solution”* (Noble, 2013). Finally, inherent within this worldview, *“success is expressed in the numerical reduction of building energy consumption, embodied energy, waste and resource-use reductions”* (Demirel-Özer, 2014).

#### *The discourse of energy-efficiency in architecture*

Underpinned by the dominant, empirically-based discourse of sustainable architecture, the issue of energy-efficiency is prioritized. From this vantage, the building is essentially regarded as a large machine consisting of an assemblage of pre-engineered constituent ‘parts.’ These ‘parts’ can be dissected, the efficiency of each individually assessed before they are put together to form a synergetic whole. This approach is seen to produce a repertoire of technically-sound design solutions. Each model of energy-efficient architecture serves as a *“reliable precedent to be replicated with universal success regardless of context or circumstance”* (Farmer and Guy, 2010). This ability to replicate energy efficient buildings is suggested as an indicator of design success in the PLEA 2014 papers. For example, authors of paper 2253 state *“the project was scrutinized for its environmental and financial self-sufficiency, and its ability to be self-replicating.”*

#### ***Sustainable architecture; an elite class of buildings.***

It is implied that a commensurate relationship exists between the words ‘sustainable’ and ‘architecture.’ For example, it is stated in paper 2234 that *“newly erected primary schools in Australia have been broadly graded as either **sustainable** or **conventional**.”* This distinction implies that building sustainable is not the convention. This notion is affirmed by another excerpt from paper 2260 about temporary event structures. In the first instance, the authors proclaim, *“the lack of sustainability exists due to several attributes of **a temporary building**.”* Subsequently, the authors compare a case study temporary event structure to a better-performing structure, which is referred to for its *“**architectural quality** and high level of comfort with an optimal use of resources and a minimization of environmental impacts.”* We can infer from use of the word ‘building’ in association with ‘lack of sustainability,’ followed by use of the phrase ‘architectural quality’ in association with optimally-performing constructions, that ‘building’ and ‘architecture’ are not the same. Within this discourse, constructions that are sustainable are more than just mere ‘buildings.’ On the other hand, ‘buildings,’ in which sustainability has not been thought through, are not deserving of the esteemed ‘architecture’ label. In this discourse, ‘sustainable’ and ‘architecture’ are regarded as *“synonymous; sustainable architecture becomes a tautology where it is not architecture, unless it is ‘sustainable,’”* as *“good architecture should be sustainable”* (Owen and Dovey, 2008).

#### *Sustainability as the architect’s professional responsibility*

A discursive stance, placing sustainability within the architect and designer’s professional responsibility, appears repeatedly in excerpts from the PLEA 2014 papers. For example, it is asserted in paper 2599 that *“sustainable cities are created by people **who are knowledgeable about sustainable solutions**. Decisions about sustainable development are **made by people who have knowledge** of the opportunities and implications inherent in sustainable choices.”* Authors of paper 2253 proclaim that solutions toward increasing sustainable developments ultimately lie within the hands of *“some members of the architectural profession to rethink design principles.* These statements suggest that

sustainability in the built environment is the responsibility of an elite, educated guild, admitted into this guild by acquisition of an exclusive body of learning. This finding aligns with Owen and Dovey's (2008) assertion; *"architects are not only the designers of buildings, but they are the asserted producers of architecture, as opposed to mere buildings."*

## Conclusions

The objective of this paper was to interrogate what authors of architectural research mean by the word 'sustainable.' To fulfil this aim, a discourse analysis of a sample of written articles, selected from proceedings of the 2014 PLEA conference, was performed. The following points provide a comprehensive summary of the discursive uses of the term:

- Authors commonly recur to the Brundtland Commission definition, despite the fact that much of the research heralds from a multiplicity of built environment research domains. This highlights the flexibility of the definition, allowing authors to attribute the broad-brushed 'sustainability' label to a wide-ranging body of research.
- Authors sometimes describe a 'survivalist discourse,' painting a bleak picture of earth, to create a contextual background, highlighting the urgent need for sustainable solutions.
- Arguments for sustainability are often rooted within international political motivations, also intended to convey the importance of the cause at an international scale.
- Discussions of architectural solutions are drawn from vernacular forms; a discursive route commonly raising the question, *'what can be learnt from our ancestral built heritage?'*
- The status of technology and determinism is amplified, and it is believed that environmental ills can be rectified from modern technologies.
- An elitist discourse, whereby the label 'architecture' can only be attributed if the edifice is considered 'sustainable,' emerges from the written works. By association, it is believed that the creation of works of architecture is the responsibility of an educated guild of designers, who are trained to produce *"architecture, as opposed to mere buildings."*

This list of discursive uses highlights that associated meanings of the word 'sustainable' in the architectural discourse are wide-ranging. There appears to be little universal consensus on how the word 'sustainable' is to be accurately employed. On the one hand, this lack of standardised definition is likely a source of confusion. At face value, it appears that discursive uses of the word are lost within a *"jamboree of claims and concerns"* (Hajer, 1995) regarding what 'sustainable' means. Nevertheless, it is possible that this discourse is purposively constructed to be wide-ranging; mirroring the range of research topics, questions, methods and techniques available at architects and/or academics' disposal to fulfil commitment to the sustainable cause. Rather than speculatively viewing discursive interpretations of sustainability as competing, regarding these multi-faceted interpretations from a pluralist lens allows us to view diverse design solutions as successful from a sustainability standpoint. A non-standardised, pluralist interpretation of 'sustainability' is what allows architects worldwide to create a rich tapestry of architectural heritage that not only responds to, but also weaves together aesthetical, technical, contextual and humanistic considerations.

Nowadays, *"for any architect not to profess passionate commitment to 'green' [sustainable] buildings is professional suicide"* (Sudjic, 1996). Given the existence of the diversity of discursive uses of the word 'sustainability,' one question that arises is, what are the implications of such a multiplicity of meanings on design education? Resonating with the same pluralist standpoint argued for above, in both the creation and

dissemination of 'green knowledge,' we agree that it is necessary to "avoid setting up bipolar oppositions between different paradigms of thought, the light versus dark green architects or the social versus natural scientists. Instead, we can recognise researchers and practitioners as reflecting a constellation of values," (Guy and Moore, 2007). Correspondingly, "differing, often competing, modes of knowledge" (Guy and Moore, 2007) are to be regarded as opportunities for experimentation in design education, and we urge educators to partake in a teaching philosophy whereby students are encouraged to arrive at architectural solutions that both reflect and synergise the mosaic of meanings inherent in the word 'sustainable.'

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