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Architectural Design and / or Sustainable Building: A Question of Language?

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Abstract

Achieving peer acknowledged excellence in architectural design is widely considered to be the pinnacle of achievement for any practicing Architect. Indeed, at the heart of the learning outcomes of any architectural education is an emerging notion of what Architectural excellence is and indeed, notably, this includes knowing how to speak about it. Thus, conveying the professional skill of understanding and knowledge of architectural design language. Living alongside this is the widely acknowledged need for the built environment broadly - and buildings specifically - to respond to the environmental, economic and social requirements of sustainability. This apparent dichotomy of approach has brought about a schism in design practices, whereby sustainable buildings are largely perceived as worthy, pragmatic; but perhaps soulless, while outstanding architecture remains something 'other'.

This paper aims to explore the languages involved in describing and discussing excellence in these two diverging fields, with an aim to find a nexus between them, resulting in a refinement in architectural practice that might enable Sustainable Design Excellence to become the norm rather than an exception.

1. Introduction

Sustainability has become a key motivation in most forms of policy (local [1], national [2] international [3] levels) and many forms of development; providing as it does a lens by which to consider what is meant by appropriate human advancement for the 21st century and beyond. When carefully considered it provides a framework by which to consider the equity of current and future actions across its three pillars: social, environmental and economics. It has long been seen that the role of architects and architecture, in designing and enabling the delivery of quality in the built environment, from building through to urban scale, aligns directly with the ambitions of sustainable development. Indeed the Royal Institute of British Architects (RIBA) strategy 2016-20 defines their purpose '*To serve members and society in order to deliver better buildings and places, stronger communities and a sustainable environment*' [4]. In this context it can be seen that, at least theoretically, excellence in both architectural design and sustainable practices are central themes in the language of the profession. However, through the recent formation of the 'RIBA Commission on Ethics and Sustainable Development', which is tasked with considering how "*the architectural profession can best reflect its core values of public interest, social purpose and sustainability*" [5], it can be seen that the institute acknowledges that despite its integrated vision for design, the reality is somewhat different. Indeed, it will be argued here that the challenge to produce a synthesis between the two fields of architectural design and sustainable performance will require fundamental changes in education, practice and most importantly in the language that we use to evaluate and describe excellence. Confidence in a distinct language is core to Architectural education, and as is the case for all professions; it is one that enables practitioners to identify with each other, but also ensures that students are equipped to discuss and debate design, not least to enable its betterment over

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time. Here at its heart lies the need for a fluency in the language of space, concepts and qualities; language that, alongside drawing and imagery, is at the heart of communication during the design process, is indeed itself a design tool. Meanwhile, the theory and practice of sustainability has evolved its own lexicon, that speaks of environmental impacts and wider sustainable performance of buildings. It is argued here that these two languages have, as yet, not successfully merged, indeed that the language of sustainable buildings, and its evaluation, is to some extent mutually exclusive to that of architectural excellence and its associated evaluation.

Whichever design paradigm an Architect is focused upon, the pursuit of excellence is, for each the ultimate goal. However, as will be shown, the language of excellence currently applies two different lenses. This paper argues that a synthesis of language is required in order to enable pursuit of an effective nexus – Sustainable Design Excellence. Therefore, this paper aims to explore the extent to which there is an absence of reference to each other's language within the alternative lexicon of excellence. Thus leading to lack of capacity to effectively engage with either sustainability or design excellence. Indicators which characterise the two fields of Architectural Design Excellence (ADE) and Sustainable Practice Excellence (SPE) will first be defined and then this paper seeks to explore the potential for producing a synthesis of design language, such that, Sustainable Design Excellence might become a common goal.

2. Methodology

In order to undertake this work it was first necessary to establish definitions of excellence currently applicable within each field, in the context of the design process. Although three phases were initially studied: 'Pre-Design', 'Design & Construction' and 'Post Occupancy Evaluation', this paper focuses on the first two phases; that address six of the seven stages of the RIBA plan of work, a framework applied in most built environment development projects [6]; as well as to assessment tools applicable in each of the fields, including BREEAM, LEED and Open House for SPE and the Design Quality Indicator for ADE. Additionally, while the Post Occupancy Evaluation phase, is acknowledged as vital to the delivery of sustainable performance, the potential offered through synthesis discussed in this paper has begun to be successfully addressed elsewhere (Soft Landings [7] and Green overlay to RIBA's plan of work [8]). The literature relevant to each of the fields was then synthesised in order to establish evaluation frameworks, requiring the identification and definition of themes and indicators.

2.1. Defining Architectural Design Excellence (ADE)

ADE is a "tricky issue" which is very difficult to define, yet it's achievement is the goal of the industry [9]. Compounding this difficulty is the fact that many of the aspects are of a qualitative and ethereal nature; and ideas of architectural quality, excellence and style can be interchanged and conflated. This research used as its starting point the most developed definition of design excellence in the UK context, the "Design Quality Indicator" – a questionnaire which is used to rate quality [10]. In order to broaden the scope of the definition to also include architectural education and review through competition, descriptors of quality from Centre For Architecture in the Built Environment (CABE) and the design council, (including design review criteria [11], and the value handbook [12]) the QAA subject benchmark standards for architecture [13], RIBA award core criteria [14] and RIBA good design definitions [15] were added.

These sources were assimilated and repetitious elements were deleted to arrive at a list of 178 indicators, divided into Pre-Design and Process (19 indicators), Design and Construction (122 indicators) and Post-Occupancy Evaluation (60 indicators: including 23 from the Design and Construction phase which need

2.2. Defining Sustainable Performance Excellence (SPE)

The SPE evaluation framework was largely derived from a sustainability assessment tool that was developed as a part of an EU project "Open House". The aim of this project was to *'to develop and to implement a common European transparent building assessment methodology, to develop and to implement a common European transparent building assessment methodology'* [16]. Unlike many sustainability assessment tools, such as BREEAM and LEED, that focus on environmental factors, almost exclusively, the project strived to establish a holistic tool, that considered sustainability in terms of environmental, economic and social factors as well as to consider the sustainable performance throughout the development process, including the processes for their delivery.

During the process it was decided to remove those factors that would be likely to be beyond the control of the architectural designer. This included factors related to the site itself, as typically the design team is not able to influence the selection of a site for a new development. Further, factors relating to the supply of water and its disinfection were also excluded, as all buildings in the UK are required to have adequate connection to potable water. In order to consider the extent to which this theoretically derived framework

(Provided by Open house) addresses those factors that are broadly acknowledged to be representative of holistic sustainable practice excellence in existing developments, the thematic framework provided by the well respected publication by Dr Paola Sassi (2006) Strategies for Sustainable Architecture [17], was used as a sense check to realised case studies. This comparison resulted in the addition of an indicator related to design for climate change adaptation.

Following the synthesis of these sources, including deletion of repetitious indicators, a final list of 81 indicators were arrived at for the SPE evaluation framework. As with the ADE definitions, these are divided into Pre-Design (9 indicators), Design and Construction (41 indicators) and Post-Occupancy Evaluation (31 indicators).

2.3. The nexus analysis methodology

It can be seen that there are many more ADE than SPE indicators. (Table 1) This is likely due to two main factors: firstly, that they come from more numerous sources which have each attempted to define the same issues, though often in subtly different ways; secondly, it can be argued that many of the factors tackled in relation to ADE are more difficult to define, qualitative factors such as those relating to quality and delight; rather than quantities as is the case for many of the SPE indicators. The variation of the distribution of these indicators within the development process is also of interest, with the preponderance of each lying with the Design and Construction phase; while higher proportions being within the pre-design and POE phases for the SPE framework.

Table 1: ADE and SPE Numbers of Indicators per Phase

	ADE	SPE
Pre-Design	19	9
Design and Construction	122	41
Post Occupancy Evaluation	60*	31
TOTAL	178	81

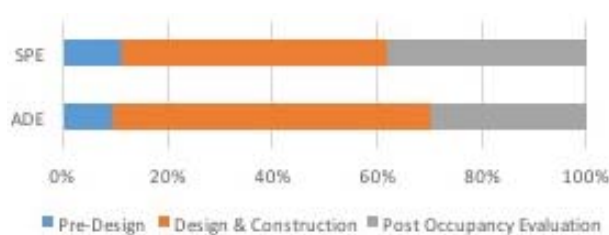


Figure 1. Proportions of indicators per development phase

This distribution of SPE indicators could be described as enabling the honing of a complex system, while those associated with ADE support the delivery of a broad contextual approach to building design.

As an approach to maintain objectivity in this qualitative analysis process, one author focussed upon the definition of ADE and its themes and indicators, while, the other's emphasis was on SPE. Then, comparative analysis of the two resulting evaluation frameworks were undertaken by each author and finally, these were cross-checked in combination to arrive at a robust 'nexus' of their meaning and language. In this way each author became the 'champion' of a field; ensuring the minimisation of bias, assumptions or preconceptions in both the creation of the frameworks and the nexus analysis.

3. Outcomes

The outcomes of the analysis phase discussed below present both the similarities and differences in the content and language used in the ADE and SPE in the two stages of Pre-Design and Design & Construction. Thus, in this section, the authors aim to explore:

- the relationship between SPE and ADE themes and indicators,
- those SPE indicators that have no equivalence in ADE and
- those ADE indicators that have no equivalence in SPE.

As a result of this analysis we aim to understand the role of language and frameworks for excellence in understanding why 1. architecturally excellent buildings are not also sustainable and 2. why sustainable buildings are rarely considered architecturally excellent.

3.1. Pre-Design

The SPE evaluation framework identified just 9 broad indicators in this phase, while the ADE suggests 19. The relationship between the themes for these indicators is summarised in the table below. This suggests unique and valuable aspects of excellence at this phase within both the ADE and SPE as well as considerable overlap in their contents.

For SPE, the integration of relevant indicators into the process of team selection is vital within this Pre-design phase; whether this be through traditional routes, including within the client brief or within competition documentation. This need is also reflected in this phase for ADE where design quality indicators call for the selection of an appropriate interdisciplinary team, chosen through appropriate methods and that results in: *'a team with a genuine understanding of*

Table 2: Relationship between SPE and ADE themes in the Pre-Design Phase

	Process of Team Selection	Site Selection	Stakeholder Consultation & Engagement	Design Quality & Excellence	Appropriate Procurement Route	Emerging Concept & Design Philosophy	Client Needs, Budget & Viability	Promote opportunities for innovation
SPE	X	X	X					X
ADE	X			X	X	X	X	X

sustainability issues, and a commitment to a project which is sustainable when taken in the round' and 'a client committed to sustainable development, both in the long and short term'. Importantly, the ADE adds to this phase, the need for consideration of broader team credentials: 'a professional team with the appropriate range and level of skills for the demands of the project'.

In SPE, the second group of indicators relates to the process and factors by which the site for development is selected. With access to public transport, services, the reuse of buildings or land and avoidance of geological, contamination flood or others risks such as radon are avoided or their impact minimised. While the third theme is associated with consultation and engagement with stakeholders from an early phase. Neither of these sets of factors are addressed at this phase for ADE, where the remainder of the factors are associated with the following design quality and excellence factors: 'have adequate amount and quality of thought applied for the demands of the project' and 'have evidence of and measures in place to ensure a commitment to excellence'.

The ADE also raises the need for the consideration and selection of an appropriate procurement route, which is perhaps a surprising oversight in the SPE given the known strengths and support that certain procurement routes offer to sustainability as a factor of quality [18]: 'be grounded in a clear set of ideas about how the project will be procured & delivered', 'have a clear procurement process route, with competitive process where appropriate' and 'have a procurement process which ensures that the design intentions are carried through to the finished project'

Of great significance to the difference between ADE and SPE at this phase is that the ADE indicators call for the design team to already: 'have evident underlying principles, values, core ideas and philosophy'; to have defined the architectural concept and philosophy and thus ensuring that this is evident at this early stage. Interestingly ADE also includes a range of indicators associated with client needs and the need to set a clear programme of work early on as well as a feasible budget and ensuring that the project is viable. Further, that taking advantage of opportunities for innovation should be a part of the design process, even at this early stage.

Although absent at this phase for SPE, this latter factor might be seen to be associated with two indicators that were placed within the design process phase for SPE within the sub section: Integrated design and planning: 'multidisciplinary & early formation of teams' and 'design charrette processes'. Whereby, the early formation of the design team and the use of design charrette processes core to the interdisciplinary design process are known to promote the uptake of design innovation [19].

Within the pre-design phase, the ADE framework also included the following indicators that can clearly be associated with sustainable thinking, but that are not made explicit within the formal sustainability evaluation process at this phase: 'has a client/brief in which it is recognised that good design can contribute to efficiency for the building's users'. Which is widely acknowledged as a key business case for social sustainability thinking in the built environment [20]. While the following ADE indicator: 'has a client committed to value rather than lowest cost and to the importance of whole-life costs' can also be considered core to sustainable economic principles, [21], but is again absent at this phase for SPE.

Generally, it can be seen that while the ADE includes reference to sustainability, albeit using different language and perhaps therefore measures of success, its focus is on instilling design concept, budget and procurement issues, whereas the focus of SPE is on site issues and the sustainability credentials of the design team. This perhaps can be argued to infer adherence to the explicit factors raised within the ADE which map directly to sustainability thinking. Although, it is equally arguable that their absence in the SPE framework, may lead to their absence during this phase of the design process.

3.2. Design and construction

In relation to the design and construction phases, it appears likely that the following relationships are explicit at the level of themes for the Sustainable Practice Excellence (SPE) and Architectural Design Excellence (ADE) Frameworks (Table 3).

Table 3: Relationship between SPE and ADE themes in the Design & Construction Phase

		Architectural Design Excellence Themes:							
		Brief: function / use / programme:	Health & wellbeing:	Transport: Movement & Access:	Context & Site:	Materials	Performance in design & use	Cost / Value / Budget	Culture / Image / character
Sustainable Practice Excellence Themes:	Environmental	Energy:	X				X		
		Lighting:	X				X		
		Materials					X		
		Water					X		
		Site Design			X	X			
		Waste					X		
		Consider climate Change Adaptation						X?	
	Social	Accessibility			X				
		Education							
		Community	X			X			
		Health & Comfort	X				X		
	Economic	Building costs						X	
		Building Performance management					X	X	
		Opportunities for Employment							

Table 4: SPE Environmental Indicators & Number of ADE Indicators per Theme

SPE: Environmental		ADE Themes								Total
		BRIEF: function / use / programme:	Health & wellbeing:	Transport: Movement & Access:	Context & Site:	Materials:	Performance in design & use;	Cost / Value / Budget:	Culture / Image / character:	
Energy:	1. Energy Efficiency Strategies - Thermal - Fabric including air tightness		2				6			8
	2. Energy Efficiency Strategies - thermal - Passive design		2		2		7			11
	3. Energy Efficiency Strategies - Systems		2				7			9
	4. Renewable Energy Sources						2			2
Lighting:	1. Daylighting strategies		1				4			5
	2. Light Pollution						3			3
	3. Efficient artificial lighting systems		1				3			4
Materials	1. Minimise need – Consider materials dimensions / build small	1				1	1			3
	2. Renewable / certified					1	1			2
	3. Local					1	1			2
	4. Low Impact (eg: Air / water pollution in source / manufacturing)					2	1			3
	5. Design for Delight - desirability					2			1	3
Water	1. Minimise Use – systems and education						3			3
	1. Efficient Use – systems and education						3			3
	2. Alternative source – grey or rainwater						1			1
	3. Waste water treatment									0
Site Design	1. Sustainable Transport: Access to public transport / Minimise car dependency / Enable Pedestrians and Cycling		1	8	1		2			12
	2. Ecological Value of Site: Previously developed & / or low ecological value & protect & enhance value				1					1
	3. Develop at appropriate high density	1			1					2
	4. Sustainable drainage									0
Waste	1. Reuse of buildings / materials					1	3			4
	2. Minimisation in construction					1	3			4
	3. Design for deconstruction					3	3			6
Adaptation	1. Design to consider climate change adaptation				2		1			3

At the level of themes, it can be seen from this comparative overview, that the ADE themes of Brief and Culture appear to have no direct mapping against the SPE themes. While the SPE theme of "Opportunities for Employment" and "Education" also appear not to be found within the ADE. This comparison will now be undertaken at the level of Indicators, firstly from the perspective of the SPE's Environmental, Social and Economic sub-themes; followed by discussion of those

indicators for which there is no synergy found in each framework.

It can be seen from Table 4, that the relationship between the SPE **Environment** and ADE indicators in terms of a broad distribution is similar to that anticipated at a theme level. However, this more detailed level of analysis has revealed a more intricate and complex distribution of this relationship than the themes alone would suggest. Whereby, the ADE Energy

theme has the most equivalence of indicators, followed by Site Design, Waste, Materials and Lighting.

In relation to SPE **energy** indicators that relate to fabric design, air tightness, passive design strategies and renewable energy sources: these were found to relate to ADE themes of Health, Context and Performance and indicators in terms of: health, for the design to consider occupant's thermal comfort; performance, for the minimisation of heating, ventilation and cooling, with coordination of systems and the achievement of energy efficiency, reduction of CO2 and emissions as well as to achieve a positive impact on the environment and to deliver a layout which takes account of solar orientation so that internal and external spaces benefit; context, to have appropriate orientation, prospect and aspect and to consider the local microclimate. Largely these factors compliment the pragmatic, high level SPE indicators, operationalising their meaning for designers. However, the indicator seeking minimisation of ventilation may simplify this aspect to the detriment of effective health comfort, while the implicit nature of references to renewable energy design in the ADE indicators, may result in reduced attempts for their integration into the fabric whether at construction or in the future.

In relation to SPE **Lighting** indicators that relate to daylighting strategies, light pollution and Efficient artificial lighting strategies: these were found to relate to ADE themes of Health and Performance and indicators in terms of: health, to provide sufficient and quality daylight and artificial light; and performance, has a layout which takes account of solar orientation so that internal and external spaces benefit, is energy efficient, reduces CO2 use and emissions, uses as little energy as possible. Here, daylighting and artificial lighting considerations are reasonably similarly considered, with the important addition of the word "quality" within the ADE framework which is absent within SPE. While, although implicit in the ADE discussion of efficiency, light pollution, and its important impacts on local flora and fauna are not explicit here.

In relation to SPE **materials** indicators that relate to the minimisation of need for their use as well as the sourcing of local, low impact, renewable, certified and finally their role in the aim to 'design for delight': these were found to relate to ADE themes of Brief, Materials, Performance and Culture and indicators in terms of: brief, where there is a call for the building to be of appropriate size, with consideration of net to gross sizes; materials, considering the use of materials wisely and responsibly, the consideration of the composition of materials, the use of good quality materials, that have a pleasing material form; performance, that reduces CO2 use and emissions; and culture, that calls for a building that has a pleasing form / is beautiful / gives delight. Here, the consideration in the brief only addresses part

of the issue, where the sizing of building elements can be related to material sizing, also to reduce waste. In relation to ADE materials indicators, again, material quality and composition here provides a complementary commentary against the expanded environmental impact agenda addressed more thoroughly by the SPE indicators. Finally, both ADE and SPE, despite slightly differing language, consider the key role that materials play in the resulting design quality 'delight' of the building.

In relation to SPE **water** indicators that relate to minimal and efficient use in terms of systems and education as well as alternative sources and waste water treatment: these were found to relate to ADE theme of Performance in terms of being energy efficient, reducing CO2 and emissions, using as little water as possible and having a positive impact on the environment. For this theme, it can be seen that, apart from the indicator relating directly to quantities of water, the other indicators relate only implicitly to water and its impacts and design implications in the built environment. Further, for waste water treatment, there are no equivalent indicators in the ADE. This theme, therefore represents a significant weakness in the ADE in relation to sustainable water design. It could be suggested that water strategies have little potential to impact on building design, although the Phillip Merrill Environmental Centre (2001), Annapolis, USA, by the Smith Group suggests otherwise (Figure 2).

In relation to SPE **site design** indicators that relate to access to sustainable transport, the protection or improvement of ecological value, appropriateness of density and sustainable drainage: these were found to relate to ADE themes of Brief, Health, Transport, Context and Performance indicators in terms of: delivering a realistic brief in relation to the site; Health, that the development promotes health communities; Transport, that the development opens up options for moving through the wider area, makes a positive



Figure 2. Phillip Merrill Environment Centre: Designed integration of water systems

contribution to the way people move around a place, has good access to public transport, can contribute to improving public transport links, has adequate and appropriate car parking, has good wayfinding and signposting, promotes sustainable transport and provides for cyclists; context, it is informed by analysis and understanding of the investigation of the nature of the site's context including patterns of movement as well as physical characteristics, has a landscape design which makes sense as a response to the nature of the site and its context and does not propose more development than the site can reasonably take; and for Performance, reduces CO2 use and emissions and uses as little energy and water as possible. It can be seen again that there is reasonable synergy in the discussion of sustainable transport and the appropriateness of density, whereby the full synthesis of these indicators would result in a stronger and greater specificity in understanding of these themes for designers in terms of design excellence. However, in relation to ecology, despite implicit consideration in ADE of the landscape design context, the importance of ecology is not explicit. While for site scale sustainable drainage, this factor is not addressed at all in ADE. Although there is some likelihood that this would be encouraged through the legislative planning process, where necessary, this may not result in its appropriate and design quality led integration into the development.

In relation to SPE **waste** indicators that relate to the reuse of buildings and or materials, the minimisation of construction and the concept of design for deconstruction: these were found to relate to ADE themes of Materials and Performance and indicators in terms of: materials, considering demolition /recyclability, encouraging their use wisely and responsibly and calling for the consideration of the composition of materials; and for Performance, the reduction of CO2 use and emissions and the use of as little energy and water as possible. It can be seen that ADE indicators lack explicit mention of design for deconstruction or the reuse of materials or buildings, both incredibly impactful on waste from construction. While, ADE does consider future recyclability of materials in the context of demolition and design focused qualities, consideration of composition of materials and their responsible use. Again, there are considerable benefits in the definition of Sustainable design excellence to be achieved through the synthesis of these two frameworks.

Finally, in relation to the SPE theme of **adaptation**, its indicator calls for Design to consider climate change adaptation: this was found to relate to ADE themes of Context and Performance and indicators in terms of: Context, has appropriate orientation, prospect and aspect and considers the local microclimate; and performance, responds to climate change. Here, again

the SPE indicators in relation to this more quantifiable issue, are perhaps arguably more explicit, as ADE's performance that responds to climate change may be interpreted in terms of mitigation rather than a design response that speaks of responsiveness to future climates. Again synthesis of the two frameworks is likely to improve the holistic nature of design responses to these challenges.

Following this discussion of the relationships between ADE and Environmentally theme of SPE at an indicator level it is now necessary to consider those environmentally associated ADE indicators for which the SPE offers no equivalent indicators:

In relation to **Transport Movement and Access**, 2 ADE indicators must be considered: firstly 'has adequate and appropriate car parking'. Although this was found to be related to SPE: Site Design, Site transport above, it should be noted that it is likely that its interpretation in the two contexts of design excellence and sustainable practice will likely differ. An ideal Sustainable Design Excellence (SDE) framework would therefore require a more explicit call for reduced reliance on motorized transport. Secondly, 'safe for goods': this is not considered in SPE and could be incorporated into any future SDE.

In relation to **Materials**, 8 ADE indicators must be considered further: the use of appropriate materials; the consideration of the construction of materials; the promotion of safe construction; the consideration of: the coordination of fittings, orientation of materials and colour and textures; that the building and its materiality is well resolved and that it as a whole contributes to innovation/develops new knowledge. While it can be argued that the promotion of safe construction is explicit in the CDM regulations and as such does not require explicit mention in a framework for design excellence. Many of these other indicators speak of other factors: coordination, orientation, colour, texture, relationships, holistic resolution; that are not explicitly addressed within the SPE. Indeed, such material qualities are often central to the language of architecturally excellent buildings and their absence in the SPE is to the potential detriment of the overall design quality of sustainable practice. Further, it is easily argued that quality and resulting longevity and user 'love' for a building is central to long-term sustainability.

In relation to **Performance** in design and use, a further 5 ADE indicators must be considered: has a design which matches up to the brief; is physically sound and works as intended; has an efficient structure; is well detailed (structurally); and is fire safe. Of these, the need for fire safety has, unfortunately, been strongly highlighted by the recent Grenfell tower disaster. While the importance of the other factors highlighted here, can again be interpreted as factors relating to design quality;

Table 5: SPE social indicators & number of ADE indicators per theme

SPE: Social		ADE Themes								
		BRIEF: function / use / programme:	Health & wellbeing:	Transport: Movement & Access:	Context & Site:	Materials:	Performance in design & use;	Cost / Value / Budget:	Culture / Image / character:	Total
Accessibility	Inclusive barrier free access			1						1
Education	Promotion of sustainable lifestyles: Including ease of operation		1				5			6
Community	Participation: identify and engage with stakeholders / encourage ownership / enhance			3	2				7	12
	Enhance Quality of Life		3	1	4		1		3	12
	Provision of & accessibility to facilities	1			2			1	1	5
Health & Comfort	Occupant Health - Minimise internal air pollution		4							4
	Noise Pollution		2							2
	Restorative environment		3							3

in terms of both functionality and detailed design, which although not directly related to sustainable performance, certainly hold relevant in terms of an ideal Sustainable Design Excellence.

A comparative analysis at the level of themes for the **Social** SPE theme again suggests a similar distribution within the ADE framework, as illustrated in Table 3, with (SPE to ADE): accessibility mapping to transport; Community mapping to Health and Context; and Health and Comfort mapping to Health and Performance; and education finding no comparable theme. While, undertaking the comparative analysis at the level of indicators, as presented in Table 5 below, again reveals a more complicated, multifaceted relationship; interestingly, at this detailed level there are some ADE indicators which can be related to Education, despite the absence of an overarching ADE Education theme.

In relation to the SPE **Accessibility** indicator: inclusive barrier free access; this was found to have direct equivalency in meaning and in language to ADE indicator: to provide inclusive and accessible access to all.

In relation to the SPE **Education** indicator: promotion of sustainable lifestyles, including ease of operation; there are 6 ADE indicators which correlate with this concept in terms of the themes: health, providing healthy communities; and performance, ensuring that the building has good coordination of operable, reliable, systems with minimal controls and a plausible cleaning and maintenance routine. The ADE indicators are vague in terms of what a healthy community might look like, but, perhaps unexpectedly, have many technical descriptors for the usability of the system. Whilst these ADE indicators are numerous, they are of a technical building systems nature and not explicitly related to building users or their lifestyles, nor do they relate to an overall educational theme; this may be because architects consider the promotion of certain lifestyles so intrinsic to their role as designers that this issue is not overtly referenced.

Comparison of the SPE **Community** Indicators, relating to Participation: identify and engage with stakeholders /encourage ownership / enhance identity, enhancing the quality of life and Provision of & accessibility to facilities; revealed a complex relationship across 6 of the 8 ADE themes. This comparison, reveals that both ADE and SPE indicators have a strong emphasis on the importance of building identity and its relationship to the wider community, including accessibility and integration with site context and in making a positive contribution to community fabric and users. ADE indicators also talk of less easily quantifiable concepts; such as lifting the spirits of users. Here, relevant ADE indicators are 'outward looking' (in terms of the building) and, unlike the SPE indicators, provide some means as to *how* these aspects might be achieved, for example, being liked by visitors, safe for people, enabling participation in the life of the surroundings, having a relationship with the character of the context, encouraging investment in the surrounding community and improving the environmental quality of the context. The ADE indicators apply a richness of language in describing these qualitative concepts, that is perhaps unsurprising given the focus that architectural training gives to conceptual work. So, in synthesis the quality and richness of ADE's Indicators can provide qualitative depth to the more pragmatic SPE indicators.

In relation to the SPE **Health and Comfort** Indicators, relating to Occupant Health, Noise Pollution and Restorative Environment, the equivalencies in the ADE are all within the Health and Wellbeing theme. While there are pragmatic ADE equivalents relating to appropriate acoustics, air quality and hazardous environments, the language of the ADE indicators again makes reference to more quality based concepts such as improving the quality of life, reducing stress, providing better and healthier places to live and use.

There are a number of ADE indicators which have no direct equivalence in the SPE, one within the Health theme: providing appropriate spatial quality and the others within the Context and Site theme; site

masterplanning, future development, historical context of the site, urban design analysis, views and landscape design. These again relate to questions of quality and design concepts, which provide parameters that inform design excellence.

This comparative analysis of the Social indicators has found that both the ADE and SPE indicators broadly evaluate the same issues, though some with more explicit emphasis (Education theme in SPE) and others in greater detail (e.g. the numerous ADE Community indicators). As was the case for the Environmental theme, the language of the ADE provides a richness and depth to the SPE, as well as indications on how to achieve design excellence. Both evaluation frameworks are concerned with both building and community social issues, while, ADE indicators do so through a different lens and stronger focus on the wider site issues and SPE on education and user issues: ADE looks out to the site; SPE looks in, to the users: Both are important.

Finally, a comparative analysis at the level of themes for the **Economic** SPE theme suggested a similar distribution within the ADE framework, as illustrated in Table 3, with (SPE: ADE): Building costs to Value; Building Performance Management to Performance and Value; and Opportunities for employment finding no a comparable theme. As was the case for Environmental and Social SPE themes undertaking this comparative analysis at the level of indicators, as presented in table 6 below, reveals a more complicated, multifaceted relationship, than was suggested through the theme level analysis (Table 6).

In relation to the SPE **Building Costs** indicators: Life cycle costs, Design for Maintenance and Longevity and flexibility, these have equivalencies in the Brief, Context, Materials and Performance ADE themes. The Brief and Context ADE indicators make reference to: the plausibility of site planting schemes; the cost issue of building value; and to the adaptability of the building for future use. The Material ADE indicators call for: the use of good quality materials, but does not specify their

maintenance, longevity or flexibility value. While the Performance ADE indicators refer to the building in a general way in terms of: low levels of maintenance, durability, weathering well and having plausible maintenance and component replacement regimes. The ADE indicators therefore deal with costs through reference to the building as a whole, rather than its constituent material components.

In relation to the SPE **Building Performance Management** indicators: Effective building handover and the setting of building performance targets; find some equivalence in the ADE indicators, though the relationship is incomplete; located with eth ADE Brief theme: the building being fit for purpose and working well; and having a clear, coherent and realistic set of aspirations and intentions. However, these fail to require the specification of building performance or to make reference to the building handover process, and as such they may be subject to wider interpretation than the equivalent SPE indicators.

In relation to the SPE **Opportunities for Employment** indicators: Considering mixed use development and Promoting opportunities for local employment; the equivalencies for the former are again vague, calling for a realistic brief in relation to the site; while the ADE indicators for local employment opportunities are more clearly stated, calling for the project to help to maintain the value of surrounding properties, and encourage investment, regeneration and new jobs and to participate in the life of the city/surroundings.

There is only one Value ADE indicator which has no direct equivalence in the SPE which relates to the project maintaining or adding to [building] value. The status of the client and their budget within the ADE was highlighted in the Predesign phase, and this emphasis is maintained here, with a focus on return on client investment. In general, the SPE indicators, therefore, define the economic indicators more specifically, with the focus of the ADE on general building performance and value for money for the client.

Table 6: SPE economic indicators & number of ADE indicators per theme

SPE: Economic		ADE Themes								
		BRIEF: function / use / programme:	Health & wellbeing:	Transport: Movement & Access:	Context & Site:	Materials:	Performance in design & use:	Cost / Value / Budget:	Culture / Image / character:	Total
Building costs	Life cycle costs vs capital cost				1	1				2
	Design for Maintenance					1	4			5
	Design for Longevity and flexibility	1				1	5			7
Building Performance management	Effective building handover	1								1
	Set building performance targets	1								1
Opportunities for Employment	Consider mixed use development	1								1
	Promote opportunities for local employment	1					1	1		3

4. Conclusions

This paper has presented the creation and comparative analysis of two evaluation frameworks for two built environment paradigms: Architectural Design Excellence (ADE) and Sustainable Practice Excellence (SPE). This was undertaken in order to begin to understand the barriers that exist in terms of language, to the delivery of a synthesised architectural paradigm of Sustainable Design Excellence. Generally, it can be concluded that both ADE and SPE have strengths and weaknesses; and that both paradigms largely seek to address the same broad themes, especially addressing themes and specific indicators that each paradigm might not expect. For example, for practitioners within the SPE paradigm, it may be unexpected that user needs and building performance are reasonably well addressed within ADE; while for those working within the ADE paradigm, that the focus of SPE is not solely on energy and performance may be equally surprising. However, the focus/lens of the language for each is however fundamentally different and thus complementary. For example, for both paradigms, site is key to excellence, but in very different ways; where the SPE unique lens, focuses on participatory practices for stakeholders, while the ADE relates more to character, culture and identity. Although identity is mentioned in SPE, it plays a minimal role in comparison to ADE where culture is the focus. What exists instead is a different and complimentary foci and an elegance, depth and proliferation of language, within the ADE framework, such as 27 ways to evaluate culture, image and character, that can only enrich a combined paradigm for architectural excellence.

A language of Sustainable Design Excellence (SDE) should therefore draw from both paradigms and create the nexus of a new language to deliver delightful, responsible and quality within a new framework for sustainable architectural design. However, in order to achieve this synthesis in practice, this new language and framework will need to be further defined, accepted and integrated into all aspects of professional including: education, media and importantly explicitly integrated into the pinnacle of architectural excellence, the criteria for national and international awards, such as the Stirling Prize.

5. Next steps / Future work

The next phase of work aims to apply the same analysis to the POE phase. Additionally, the authors will present at the upcoming PLEA conference in December 2018 on the evaluation of SPE in the context of the 21 winners of the RIBA Stirling Prize; as a proxy for ADE in current and recent practice. The ultimate goal in the authors work is

to work towards an evaluation and understanding of the design processes associated within both ADE and SPE paradigms, as well as the processes of those practitioners already successfully delivering SDE; in order to promote and enhance the prevalence of Sustainable Design Excellence within architectural practice and the wider construction industry.

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