Delivering Sustainable Design Excellence: The Potential Role of Holistic Building Performance Evaluation

Julie Gwilliam & Sarah O'Dwyer

Welsh School of Architecture, Cardiff University, Cardiff, Wales, UK

gwilliamja@cardiff.ac.uk

https://orcid.org/0000-0003-3256-7960

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We suggest enhancing the discussion of the identification of the knowledge gaps, and

Delivering Sustainable Design Excellence in Architecture: The Potential Role of Holistic Building Performance Evaluation

The argument for building performance evaluation (BPE) has, to date, largely been made by actors focused upon ensuring the achievement of quantitative standards of performance, such as energy performance and carbon emissions. However, it can also be argued that the value of an understanding of quantitative *and* qualitative performance and its role in evidence informed design is much broader. Indeed, that the potential provided by the embedding of learning cycles from BPE stretches across both architecturally (ADE) and sustainability (SPE) led design paradigms. Thus providing opportunities to inform the significant changes in architectural practice required to achieve architectural Holistic sustainable design excellence (HDE). This paper aims to explore the role that BPE might play in this transition through reporting of performance of Stirling Prize winners, as proxies for Architectural Design Excellence; framework evaluation of the language associated with current BPE practice and establishment of an expanded holistic scope for BPE.

Keywords: Design process; Sustainability; design excellence; Precedent; Building Performance Evaluation.

Introduction:

In order to achieve an ethical and sustainable built environment that supports both mitigation of and adaptation to climatic change, as well as considering the wellbeing of both occupants and the wider community, the thinking and practice of sustainability must be embedded in design decision making for stakeholders and professionals alike. However, as was acknowledged by the Royal Institute of British Architects (RIBA) in establishment of its *'Commission on Ethics and Sustainable Development'* and in its Council's reassertion of its "*unequivocal commitment to placing public interest, social purpose, ethics and sustainable development at the heart of its activities"*(RIBA 2018); such a necessary integrated vision of architecture and sustainability has yet to be fully realised.

The context provided by the institute's verbal commitments along with the plethora of global environmental, social and economic challenges provides a clear theoretical context in which the two predominant architectural practice paradigms exist: Architectural Design Excellence (ADE) and Sustainable Performance Excellence (SPE). Although not wholly rational practices, the design processes associated with each paradigm have distinct structure, components and procedures (Stolterman, E. 2008). While, the ADE lens typically takes at its heart the generation of a concept, which works to inform the design's functions and aesthetics; its generative processes are relatively individual, typically stemming from the client, the site and its context, the design team, experience, knowledge and architectural precedent. The SDE lens in contrast, typically pursues sustainable performance, rather than a project derived concept, where arguably sustainability itself becomes the concept driver; though one imagined as an endpoint rather than a process and in fact often resulting in a 'performance gap' between the predicted energy use and the actual energy use of the building (Liang, Qiu, & Hu, 2019). Both paradigms are striving for excellence, through application of different lenses to its meaning; inhabiting mutually exclusive camps with distinct processes, languages and design tools, including precedents (Gwilliam, Julie & O'Dwyer, S, 2018a).

Arguably, prize winning projects might provide a short-hand for ADE; while SPE is typically validated by sustainable assessment tools applied at detailed design stage, (e.g. BREEAM and LEED) and less frequently by evaluation of performance in use (Stevenson 2019). A nexus in these approaches is however, rarely achieved, as was evidenced in a recent study by the authors of the Stirling prize winners over its first 21 years, 1996 – 2016, that found very few of these projects, arguably heralded as the pinnacle of ADE, would also be considered as representative of the SPE paradigm, as is

summarised in table 1 through the proxy of Display Energy (DEC) and Energy Performance Certificates (EPC) for these buildings (Gwilliam & O'Dwyer 2018b).

Insert Table 1 here

However, in order for the current global challenges to be adequately responded to by the built environment, these paradigms must converge, necessitating the associated lexicons of ADE and SPE and indeed those precedents used as design drivers and central references in their associated design processes to also come together. Indeed, a recent analysis of the professional languages associated with both archetypes at the pre-design, design and construction phases (Gwilliam & O'Dwyer, 2018a), found the two paradigms to be both *'different and complementary'*.

In the context of such arguments for union the role of knowledge in the architectural profession must be acknowledged. The RIBA's publication of 'Building Knowledge: Pathways to Post Occupancy Evaluation' (2016), sought to embed POE (a subset of BPE) into architectural practice. Arguably, this was professional acknowledgment for the need for a formalised route for the professional learning cycles that Schon (1987) called for and should surely be expected of a knowledge based profession, of which Architecture claims membership (Collins, 2014). However, uptake of BPE practices remains sluggishly slow and low (Stevenson, 2019).

Stevenson, (2019) has recently provided a thorough review of the history of POE and BPE and indeed argues, as we will go on to support here, for the embedding of these practices in architectural education and practice, however, the work presented here focusses, in a complementary manner, on the exploration of the scope of future BPE. It is suggested that in order for the architectural evidence and knowledge basis called for

by Stevenson and others (Hay et al 2017, Samuel, 2017) to fully inform future architectural design and thus an effective synthesis of these two paradigms, precedent, one of the foundation stones of all architectural design processes (Gwilliam & O'Dwyer, 2018b), must begin to be fully informed by evaluative evidence of building performance. This not only in terms of holistic sustainability but also in terms of themes that are more familiar to the ADE paradigm, acknowledging the value of qualities, e.g. space, materiality; that may challenge measurement and yet are fundamental to the design excellence strived for. Indeed qualities that the architectural community argues positive occupant experience, wellbeing and society is dependent upon (Unwin, 2014). It will be argued here that in order for this nexus to be delivered it must be informed by BPE that is derived from *both* sustainable performance and architectural design qualities. This synthesised Holistic Design Excellence (HDE) requires open critique and evidence informed evaluation that values and encompasses both paradigms.

So, this paper intends to explore the extent to and thematical scope with which each paradigm currently engages with BPE, and proposes the necessary revised scope to inform a new synthesised HDE; thus, how such critical engagement with BPE could lead to the knowledge based profession being realised (RIBA 2014). Finally, the study will compare the proposed BPE scope revisions against that published by the RIBA (RIBA 2016a & 2016b), that aimed to provide an architecturally relevant approach to BPE that built upon existing industry standards including 'Soft Landings' and the BUS methodology (www.usablebuildings.co.uk, 2020).

Methodology:

In order to establish an appropriate scope for BPE for the synthesised paradigm it is first necessary to understand the scopes of its practice in the ADE and SPE models. This will be undertaken by building on a previously applied framework analysis approach by the

authors to the pre-design, design and construction phases of development (Gwilliam, Julie & O'Dwyer, S, 2018a), where *"the literature relevant to each of the fields [is] synthesised in order to establish evaluation frameworks, requiring the identification and definition of themes and indicators."*. The framework method applied in both pieces of work is emerging as an effective qualitative analysis method for application across the social sciences (Ritchie & Lewis, 2003). An acknowledged gap in the previous work was the relationship that holistic BPE might play in the convergence of these two paradigms; this work is undertaken here; in order to identify and define 2 distinct theoretical BPE scoping frameworks, drawn from literature defining excellence in both paradigms using framework analysis of key published texts defining excellence in ADE and SPE.

The ADE_BPE framework was derived from several sources which attempt to define and explain the *'tricky issue'* of defining excellence and quality in design (Dewulf, and Van Meel 2004). Owing to this lack of definitive sources, a three-pronged approach was taken to search for ADE models in research, educational and professional practice bodies, with the criteria for use of the models a clearly described and recorded definition of aesthetic architectural design qualities, or research in this area. Research sources included: the "Design Quality Indicator"; descriptors of quality from the Design Council, (including Design Review Criteria , and The Value Handbook); educational sources such as the QAA subject benchmark standards for architecture and professional bodies including the RIBA good design definitions and RAIA award core criteria. These sources were assimilated and repetitious elements deleted to derive a framework of 5 themes (Table 2) and 60 indicators. Despite the majority of sources for this analysis being UK based, this is not considered to narrow the potential application of the resulting frameworks. It does, however, reflect the current lack of clear universal sources and definitions on what constitutes 'quality' design.

While, the SPE framework was built upon the output of an EU project "Open House" that produced an holistic sustainability assessment tool (Open House Project), that arguably had already undertaken framework analysis of existing sustainable design evaluation frameworks and consequent synthesis of scope. Notably, "Open House", expanded upon the typical scope of environmental assessment tools, such as BREEAM and LEED in order to seek to establish an approach to holistic sustainable building evaluation. It aimed to expand both the scope to include social and economic factors as well as to expand the duration of evaluation to include performance. As a result of this, 3 themes comprising 31 indicators were established for the SPE_BPE framework.

At this early phase of understanding the potential synthesised scope for BPE, it can be seen that ADE offers approximately twice the number of total indicators than SPE.

Insert Figure 1a & 1b here

Two likely reasons for this are: their derivation from a breadth of sources; secondly, the factors being addressed by ADE indicators are often less easily defined, qualitative themes, including those relating to quality and delight; rather than quantification of performance, as is more common in the SPE paradigm.

It should be noted here that in order to counteract any possible bias (in particular towards a positive evaluation of the SPE paradigm, as this is the research area of both authors) and maintain a level of objectivity in this analysis process, each author initially undertook analysis from the perspective of one design paradigm only, with a cross checking process undertaken by both authors, enabling the development of a robust *'nexus of … meaning and language'* to be achieved (Gwilliam, Julie & O'Dwyer, S,

2018a). Hereby, the authors became '*critical friends* for each of the paradigms enabling robust cross-evaluation of results seeking to minimise bias or preconceptions influencing the research outcomes.

Results:

The results of the comparison of the SPE and ADE evaluation frameworks for BPE are presented below. In particular:

- Comparable content between the two paradigms;
- SPE indicators with no comparable content in ADE;
- ADE indicators with no comparable content in SPE.

From this systematic comparison, we aim to establish an expanded, single scope for a BPE framework necessary for delivery of Holistic Design Excellence across the built environment. Initially a comparison at the level of themes, suggests that the following relationships are explicit between the SPE and ADE Frameworks:

Insert Table 2 here

It can be seen that the SPE theme of *Environmental: site design* has no equivalence in the ADE themes, while the ADE theme of *response to client needs* is not explicitly mirrored in the SPE, and *Cost/Value/Budget* minimally so. From the ADE perspective, the majority of equivalent themes are concentrated around the social SPE indicators, which arguably points to issues that architects are more typically comfortable with. From the SPE perspective, equivalents are mapped most frequently against the ADE *Performance in design and use*, which points to

the typical SPE BPE process; most frequently targeting quantitative performance, while *client, cost and user needs* less so.

SPE Environmental Sub Theme Scope Comparison

Table 3 presents the relationship between the SPE environmental sub themes' 14 indicators and the ADE themes, with an analysis of the relationships at the constituent indicator level, where 10 ADE indicators were found to have a relationship. At the indicator level, ADE themes of *response to clients, response to user needs* and *response to community & social needs* have no SPE equivalence. Further, the SPE sub themes of *Water: Alternative source and waste water treatment* and *Site Design: Sustainable Transport & Enhanced ecological value of site* also have no comparable ADE indicators. While, the greatest synergy is in the SPE sub theme of '*energy'* where all of the previously identified 10 ADE indicators were also found to relate. All bar one of the SPE indicators map onto only one ADE theme: *performance in design and use.* This is perhaps not surprising given the global, European, and UK policy frameworks in the field of carbon and low energy design such as the EPB Directives (EU)

Insert Table 3 here

For the ***SPE energy sub theme*** indicators, relationships were found with the ADE themes of *Performance in design & use* and *Cost / Value / Budget* and in particular with indicators in terms of: *Performance in design and use: minimises heating; minimises ventilation; minimises cooling; is energy efficient; reduces CO2 use and emissions and;*

has a layout which takes account of solar orientation so that internal and external spaces benefit, uses as little energy and water as possible, has good co-ordination of systems; has a positive impact on the environment and in terms of *Cost / Value / Budget does not include expensive add-ons.* It can be seen that these 10 ADE indicators largely compliment the 4 high level and pragmatic SDE indicators, and to an extent provide operationalised meaning to these for designers. There are however, some concerns as to the potential lack of clarity and / or over-simplification of ADE indicators, (e.g. *'minimise ventilation'*) risks negative occupant health and comfort impacts. However, the ADE paradigm's acknowledgement of the need to *coordinate systems* and the links made in the energy theme with *cost, value and budget*, in not including *expensive add-ons*, imply a drive towards the necessity for design synthesis, which is potentially very encouraging for a new HDE paradigm.

While in relation to the ***SPE lighting sub theme*** indicators, a relationship – albeit vague - was found with the ADE theme of *Performance in design & use* and in particular with indicator: *uses as little energy and water as possible;* though aspects relating to lighting, are nearly absent from the ADE paradigm.

For the ***SPE water sub theme*** indicators, a relationship was found with the ADE theme of *Performance in design & use* and in particular with the same indicator as for lighting: *uses as little energy and water as possible.* As with lighting above, factors relating to water are reduced to a quantitative evaluation, while lighting qualities and occupant feedback, experience and performance associated with this theme again appear not to be considered in either paradigm.

While for the ***SPE site design sub theme*** indicators, no equivalent ADE indicators were identified. Though it is likely these issues would be considered at the design/construction phase, they are not explicitly highlighted at this BPE phase.

Arguably, sustainable transport relates directly to the occupant experience of a development and although it could be argued that this is not significantly influenced by the architectural design, however, embedded sustainability thinking in a design strategy can have broader influence on occupant behaviour (Lawson, 2013), indeed this is embedded in theories of social sustainability and, thus, user feedback on this issue would be beneficial to inform future design decision making.

Finally, for the ***SPE Climate Change Adaptation sub theme*** indicator, a relationship was found with the ADE theme of *Performance in design & use*, with, *responds to climate change.* Although these two are closely related, they are arguably complementary, as the ADE indicator relates to the extent to which the design delivered responds to known climatic change; while the SPE indicator makes reference to the design's role in promoting social adaptive capacity to climate change. This latter theme relates to the occupant experience of a development, as climate change adaptive capacity can be argued to lie largely in the social context, with the network associated with a development holding significant capacity for appropriate adaptation to climate change (Folke et al 2003). Again, here, the two frameworks are presenting complementary perspectives on similar themes.

SPE Social Sub Theme Scope Comparison

Table 4 presents a comparison of the sub themes' 12 indicators of the SPE Social Theme against18 no related ADE indicators. A more broadened mapping of SPE themes is found beyond solely the *performance in design and use* ADE theme, though *response to client needs* and *cost / value / budget* is still absent, with a largely ignored SPE *Health and Comfort* indicators at the ADE theme level.

Insert Table 4 here

For the ***SPE Accessibility sub theme*** indicators, a relationship was found with the ADE theme of *response to community & social needs* and in particular with the indicator: *creates positive opportunities for social interaction, and encourages neighbourly behaviour*. These indicators are again complementary and would thus enrich a synthesised BPE scope.

While for the ***SPE Education sub theme*** indicators, relationships were found with the ADE themes of *Response to user needs, response to community and social needs* and *Performance in design and use* and in particular with the indicators: *gives personal control to users* and *minimises controls.* As with previous themes, these indicators are mutually complementary. Although, *minimising control*, appears to simplify the concept of control of systems, indeed more complex controls with intelligent control systems may be the most appropriate solution for a design problem (Naylor et al, 2018).

In relation to the ***SPE Community sub theme*** indicators, relationships with the ADE themes of *Response to user needs* and *Response to community and social needs* were found. In relation to user needs, relationships were found with the following 7 indicators: *supports other occupants, visitors and customers in their activities within the building, promotes happy, content users, improves the lives of users, provides attractive and healthy working conditions that help to recruit and keep staff, is inclusive in its design, is convenient and efficient for all to use* and *is accessible for all users.* While, relating to the theme of community and social needs relationships were found to a further 7 indicators: *gives additional benefits interpreted from the brief, serving the community, reduces opportunities for antisocial behaviour such as vandalism and crime, can help build strong communities, can revitalise or regenerate run down*

neighbourhoods, builds environments with strong identities, can revitalise or regenerate run down neighbourhoods and provides local facilities. This reveals again the strong emphasis ADE places on wider, outward looking community issues such as giving additional benefit to the community, improving lives and establishing a strong identity. The ADE themes in this way look beyond the skin of the building to qualitative issues of community whereas SPE indicators relate to more pragmatic community issues.

Finally, the ***SPE health and comfort sub theme***, indicators, were found be related to the ADE themes of *Response to user needs, Response to community* and *social needs* and *Performance in design and use,* particularly in relation to 4 indicators: *provide attractive and healthy working conditions that help to recruit and keep staff, is secure, reduces opportunities for antisocial behaviour such as vandalism and crime* and *is fire safe.* While the remaining ***SPE health and comfort sub themes' 4*** indicators of *Occupant Thermal Comfort, Occupant Acoustic Comfort & Noise Pollution, Noise Pollution, Occupant Visual Comfort* and *Restorative environment* were found to have no related ADE indicators. Where comfort is discussed in ADE it relates to qualitative user health and the need to promote user happiness to recruit and keep staff, in contrast to the SPE measure of quantitative measures of user comfort. A holistic BPE should address both these arenas of user comfort.

Again for this theme it can be seen that SPE and ADE frameworks together provide a more comprehensive framework by which to assess building performance and inform precedent analysis and thus future design decision making.

SPE Economic Sub Theme Scope Comparison

Finally, Table 5 presents a comparison of the sub themes' 5 indicators of the SPE Economic Theme against the ADE framework, with a total of 14 ADE indicators found to relate to this SPE theme. It can be seen here that one ADE theme was found not to correlate with SPE: Economic, *response to client need.* It can also be seen in the table that the SPE indicator *Effective building handover* is not represented in ADE indicators

Insert Table 5 here

For the SPE ***building costs sub theme*** indicators, relationships with the ADE themes of *response to user needs and Performance in design and use* and in particular with the 6 indicators: *is durable, weathers well, has plausible maintenance and cleaning regime, has clear wear and tear regime/replacing components plan, promotes only low levels of maintenance to keep them working and looking good* and finally, *is flexible and adaptable* were found. The ADE framework thus provides a client focus, with the cost issues to do with longevity, flexibility and maintenance being discussed at a building level and in terms of financial benefit to client e.g. running costs.

While the SPE ***building performance management sub theme***, indicator of *effective building handover* was not found to directly relate to ADE themes. This is a distinct limitation of the ADE paradigm, where the design process is often seen as linear, stopping when the building is handed over; while the cyclical process enabled by effective handovers have been found to be directly related to effective building performance as well as learning embedded in future projects (Tan et al 2018). While, the SPE indicator: *review targets: Performance management*, can be related to the ADE themes of *performance in design and use and Cost / Value / Budget* with 6 related indicators: *is physically sound and works as intended, is operable, is reliable, delivers*

value over the whole life of the building, offers good value both in the short and long term and has low as possible running and *maintenance costs.* So in relation to this second indicator of this sub theme *building performance management,* it has been found that the ADE framework again provides additional and specific factors that enable a fuller description and understanding of the necessary effective performance in relation to performance management.

Finally, in relation to the SPE ***opportunities for local employment sub theme's*** single indicator *promote opportunities for local employment,* 2 indicators from the *response to community and social needs* ADE theme were found to correlate; namely, *can help build strong communities and can revitalise or regenerate run down neighbourhoods.* These again enable clarity in the meaning and operationalisation of this SPE theme.

ADE Scope Comparison

As has been seen, there is an aligned and complementary relationship between the 3 SPE themes and 31indicators and 44 of the ADE indicators. However, as presented in Figure 6, this leaves 16 SPE indicators that have no ADE correlation, and 2 ADE themes that were considered to be only partially represented within the SPE framework.

Insert Figure 2 here

In summary, the ADE themes responding to client needs, user needs, community and social needs have no equivalence in the **SPE environmental** indicators. This highlights pointedly the [over] focus of current SPE BPE processes on quantitative measures related to the performance of the building whilst largely ignoring the qualitative and

broader issues related to the successful procurement, commissioning and habitation of a building. While, more ADE themes can be mapped to SPE themes in the social indicator set than in the environmental, response to client needs and cost/value/budget still have no SPE equivalent. The language of the ADE indicators tends towards more qualitative and ephemeral qualities, whilst SPE focuses on more practical quantitative issues. Both are important. In relation to the **SPE economic** theme the absence of review of client needs is again notable, indeed, this theme remained absent across the whole SPE framework.

Generally, the perspectives provided by the client and the budget is not evident in the SPE themes, instead the focus is on quantitative issues which are practical and measurable and which relate the building performance and its operation within a site and community. In contrast the ADE theme ***Response to client needs***, that comprises 3 indicators: *delivers what client has asked for, gives additional benefits interpreted from the brief, serving the client and supports client need (e.g. school building should Enhance learning, hospitable building should promote shorter stays for patients)* found no correlation in the SPE framework. As has been argued elsewhere, review of the extent to which the client needs have been delivered, is surely a fundamental benchmark by which a project might be evaluated and as such must be embedded within any proposed complete BPE scope.

A further area in which the ADE framework considers a greater breadth of factors, is in relation to the theme of ***Response to user needs,*** where a partial relationship was found in the SPE framework for the indicator*: provide attractive and healthy working conditions that help to recruit and keep staff;* while no correlates were identified for a further 5 indicators: *accommodates user needs; gives additional benefits interpreted from the brief, serving the users; boosts user productivity; provides a more valued,*

more productive workforces and is spacious. It would be hard to argue against the value and importance of user satisfaction in the built environment and thus any proposed BPE scope must address these factors.

In relation to the theme of ***Response to community and social needs*** a much closer and more complete relationship was found between the SPE and ADE frameworks, with the ADE indicators perhaps addressing these issues in a less specific manner, whilst retaining a broader, more qualitative outlook, that seeks to embrace and address more ephemeral issues to do with happiness, community identity, place making and giving of additional benefits which were not necessarily programmed for. One indicator for which there was no comparator in the SPE framework was, however, identified through this process: *makes a generous contribution to the public realm, to benefit people in general as well as the building users.*

The ADE theme of ***Performance in design and use*** was similarly well represented within the SPE framework, although three indicators were found that were unique to ADE, namely: *has a design which matches up to the brief, has an efficient structure and is well detailed (structurally).*

Finally, the theme of **Cost / Value / Budget** was also found to have been only partially represented in the SPE framework, with 7 ADE indicators for which no comparator could be found: *contributes to a profitable premises, turns an overhead into an asset, provides desirable properties, provides more marketable buildings, delivers a return on investment, is cost effective: in the long term, good design always costs less than bad design* and *is completed on time and on budget;* as well as one for which a partial correlate was found: *does not include expensive add-ons.* It is arguable that these indicators are again closely aligned with client satisfaction, and as such provide a foundation for a comprehensive BPE scope.

Discussion:

This study has aimed to explore the theoretical establishment of a more complete scope for BPE studies, that might seek to inform both architecturally and sustainable excellent design, through the process of evidenced informed design (Lawson 2013). It can be seen that the scope and focus of each framework and its constituent language differs, while comprising complementary approaches to the understanding and evaluation of the full breadth of themes important for BPE. Both have strengths and weaknesses; they thus provide a balanced input to approach a solution to the challenge of achieving a new evidenced informed BPE through which the proposed synthesised paradigm of Holistic Design Excellence (HDE) might be delivered.

The BPE scope suggested by this comparison of the ADE and SPE BPE evaluation frameworks will now be compared against that promoted and proposed, in turn, by the RIBA in their publications: 'Pathways to POE', 'Value of Architects '(RIBA, 2016a); and 'Post Occupancy Evaluation and Building Performance Evaluation Primer' (RIBA, 2016b). This is undertaken with the intention of exploring the extent to which this theoretical scope has already been acknowledged and promoted within the industry. It is encouraging that the RIBA (2016a) suggests that BPE *'... provides evidence of a wide range of environmental, social and economic benefits core to sustainability. It can also address complex cultural issues such as identity, atmosphere and belonging.'* Although equally, discouraging that only 10% of practices promote POE as being within the scope of their works (ibid).

Insert Table 6 here

i Dependent on Project Size / ii Measure any areas of concern / [p] partially addressed

As illustrated in table 6, it can be seen that the vast majority of the factors raised by the RIBA POE Primer (2016b), are found to have synergy with either, or both of the theoretically derived SPE or ADE BPE frameworks. Those that were not are: review of the project with the design team; the analysis of embodied carbon, which was raised in the design and construction phase of the previous work and could legitimately be reviewed at this stage to account for variations between design intentions and actual delivery (Gwilliam & O'Dwyer, 2018a); and finally, comparison of benchmark against published data, which is arguably a minor point not explicitly stated within either framework.

However, it must be noted that the primer has a number of significant omissions from the synthesised BPE scope emerging here, which would arguably have a significant impact on the potential of resulting information fully informing the design processes and completing the learning cycle promoted by Schon (1987), the RIBA (2018a) and Stevenson, (2019). Most notably relating to:

- the ADE theme of Cost Value and Budget, and the response to client needs although this is to some extent embedded in the proposed reviewing of the business case;
- the ADE theme of response to Community and Social needs / the SPE Economic Sub theme of opportunities for local employment and the SPE Social themes of Community and Accessibility, in particular looking beyond the building to wider community benefits and giving back through restorative environments,
- From both the SPE and ADE frameworks themes associated with broader user perspectives are not acknowledged explicitly, although the need for user feedback is noted in section 4: Occupant feedback – where themes are not discussed, but methodologies are.

- From the SPE perspective, performance evaluation of Water systems is not considered, nor is climate change adaptation, site design, accessibility or acoustic comfort highlighted.
- And finally, from the ADE perspective: Fire Safety and Inclusive Design are not highlighted

Conclusion:

This paper aimed to explore the scope of evidence required from BPE to inform precedent studies such that they might be used both as an evidence basis for the advancement of the architectural profession and reflective design practice; as well as provide the impetus for development of a new design paradigm that combines excellence in sustainable performance and architectural design. It has been found that both the SPE and ADE paradigms offer much to the understanding of the necessary scope of such BPE practices. Indeed the expected SPE focus on quantitative understanding of environmental themes is supported by ADE interest in client and user perspectives of these aspects. While both SPE and ADE support an encouraging attention on the wider impact of development on context, community and society. It is therefore arguable that a BPE scope informed by this study would thus, enable information to feed into the sought after synthesised design paradigm HDE that combines both sustainable and architectural excellence.

A comparison of this scope with that proposed by the RIBA POE primer (2016 b) found that while the scope is comparable, a number of significant themes were missed from the primer including: the perspective of the wider community and society, a clear ethical concern for the profession as well as potentially most importantly for the profession’s clients performance related to cost, value and budget.

Thus, in order to promote a critical reflective engagement with an *evaluated* precedent, BPE must become a widespread, acknowledged and informed role for the profession, however, what is understood is the scope of such practices must evolve to provide the full breadth and scope of knowledge required to inform HDE. Critically, agreed and consistently applied methodologies must evolve to support each aspect of this proposed scope and the profession must acknowledge and embrace its long term relationship with its products. Work that is being undertaken by academics must be made accessible to practice (Samuel, 2017), that being undertaken by individual practices, such as that undertaken by Architype and Fielden Clegg Bradley (RIBA 2016a) would ideally be shared and interdisciplinary working to deliver this must be enabled (Stevenson, 2019) to enable a reflective, cyclical design process which uses the learnings from a broadened BPE process to inform precedent in order to deliver widespread ***Holistic Design Excellence*** in practice.

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