

**The ‘Biophilic Organization’: An Integrative Metaphor for Corporate Sustainability**  
**Jones, D.R. Journal of Business Ethics (2016) 138: 401. doi:10.1007/s10551-015-2640-2**

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**Abstract**

This paper proposes a new organizational metaphor, the ‘Biophilic Organization’, which aims to counter the bio-cultural disconnection of many organizations despite their espoused commitment to sustainability. This conceptual research draws on multiple disciplines such as evolutionary psychology and architecture to not only develop a diverse bio-cultural connection but to show how this connection tackles sustainability, in a holistic and systemic sense. Moreover, the paper takes an integrative view of sustainability, which effectively means that it embraces the different emergent tensions. Three specific tensions are explored: efficiency versus resilience, organizational versus personal agendas and isomorphism versus institutional change. In order to illustrate how the Biophilic Organization could potentially provide a synthesis strategy for such tensions, healthcare examples are drawn from the emerging fields of Biophilic Design in Singapore and Generative Design in the U.S.A. Finally, an example is provided which highlights how a Taoist cultural context has impacted on a business leader in China to illustrative the significance of a transcendent belief system to such a bio-cultural narrative.

**Key Words: Biophilic Organisation, Sustainability, Generative Design, Biophilic Design, Taoism.**

## 1.0 Introduction

*'We need to enhance our recognition that we are just another biological creature and see ourselves in that way.....some of our most alienating work environments, in the sense of separating us from nature, are often in the modern office building where people are in these very bland, hostile environments with no access to windows or any experience of the outside or natural environments. Ironically, if you tried to do that to a caged animal in a zoo, you would violate legal statute, and would be prevented from doing so. We don't allow zoo animals to be in these barren, alienating, unnatural environments. And yet we allow ourselves to be, and it's such a glaring example of how we don't see ourselves like that tiger in the cage, that we're just as much dependent upon those experiential connections as the tiger is. We lose track of that because we see ourselves as somehow apart or separate from nature. We need to maintain that broader understanding of who we are and where we fit into the natural scheme'. (Kellert, 2004)*

As Hahn et al (2014) argue most scholars in the field seem to agree that corporate sustainability requires firms to address interconnected and interdependent economic, environmental and social concerns at different levels. The begging question with such an espoused 'triple-bottom line' perspective is that what happens when all the 'win-win' solutions have been exhausted and there is a clear conflict between the predominant financial issues and the silent ecological imperative. It is no surprise that the financial bottom line, within the current corporate sustainability

discourse, is normally prioritized to instrumentally satisfy the expectations of the shareholders, with the ecological and social subsumed within this agenda.

In response to such an economic bias, this paper concurs with Gao and Bansal (2013, p.244) who recognize and embrace ‘the contradictions and diversity of interpretations between and within the financial, social and ecological dimensions’. This integrative view on corporate sustainability stresses the need to not emphasize one sustainability aspect over another and welcomes the tensions and conflict between each sustainability dimension, rather than to eliminate these tensions (Hahn & Figge, 2011). Drawing specifically from Hahn et al.’s (2014) integrative framework for sustainability, the paper centrally focuses on how organizations could be incentivized to adopt such tensions considering the fact that the economic institutional incentive is so great. This paper thereby concurs with Dyllick and Hockerts (2002) who argue that for a corporation to be truly sustainable, managers need to consider a greater primacy of the ‘natural case’ and the wider systemic and temporal ‘societal case’ for sustainability. The key problem with the sustainability challenge is that from a stakeholder perspective, the bio-physical environment, future generations and much of society is voiceless/or excluded within sustainability discourse.

However, if we only focus on giving voice to the ecological dimension of sustainability, we quickly realize that it is a contested terrain in its own right—a site of competing cultural and social definitions and interests (Hannigan, 1995, p.185). Macnaghten and Urry (1998) argue that modernistic, compartmentalized conceptualizations of nature as a resource-providing system, separate people from the biophysical environment and do not reveal its contested, diverse

meanings: nature as landscape, as an object of scientific scrutiny, as threatened and in need of protection, as a resource-providing system, or as a source of spiritual renewal. In terms of the role of business within this discourse, Starkey and Crane (2003) argue, current sustainability agendas fail to shift or re-enchant the organization's diverse relationship with nature.

Therefore, this paper argues that business needs to embody an inclusive, diverse conception of nature, one that accommodates both the human and the nonhuman components of the greater life system, without collapsing the distinction between them (Mathews, 2011). This narrative could be described as bio-inclusive as opposed to bio-centric, implying that even if it is conceded that our moral reasoning starts within the human circle, this circle needs to be expanded to include the interests of the members of the larger life system.

Such a bio-inclusive narrative would have the intention of giving voice to the silent stakeholders through the specific mechanism of developing a meaningful emotional and experiential connection to these silent stakeholders, such as the biophysical environment and future generations, within the exclusive stakeholders who do have a voice. This paper thereby concurs with Birkin et al (2010) who argue the case for new transcendent business models for sustainable development. New transcendent referents are needed in the way business conceives multiple realities and our relationship with them, particularly with respect to our relationship with the biophysical environment and future generations. As Rapport (1997) argues such a referent needs to transcend rationalism, dualism and fragmentation. Knowledge needs to be conceived as part of a multidimensional and systemic world and a pertinent narrative needs to situate the ethic and political dimension of the act of knowledge within a temporal, social and planetary commitment.

Barry & Elmes (1997) argue that such a narrative is located where the natural environment is made meaningful to human identity, experience, and relationships.

The following section argues a case for such a central bio-cultural narrative to act as a pertinent integrative incentive to be developed within the corporate sustainability challenge. In order to enact such a notion, a pertinent heuristic organizational metaphor inspired by evolutionary psychology is then elaborated upon to form the primary, root metaphor of the 'Biophilic Organization' (Cornellison & Kafouros, 2008).

It will show how this Biophilic Organization offers a new perspective to meeting competing corporate sustainability demands simultaneously (Smith and Lewis, 2011). Moreover, the Biophilic Organization metaphor represents a synthesis strategy, a key part of an integrative corporate sustainability strategy, as it facilitates the pursuit of competing demands through an overarching or mediating, novel logic and frame of reference. By offering a new bio-cultural narrative and metaphorical frame within this synthesis perspective, this paper more specifically responds to Hahn et al.'s (2014) call for more research around the most appropriate theoretical lens to analyse specific tensions.

A synthesis strategy is utilized when managers seek new perspectives that link or accommodate the opposing poles of a paradox (Hahn et al., 2014). Poole and Van de Ven (1989) highlight that paradoxes or tensions can be managed through opposition, spatial or temporal separation or synthesis. A synthesis strategy represents moves beyond purely acknowledging tensions and moves towards resolving corporate sustainability tensions, in which "resolution does not imply

eliminating a tension but, rather, finding a means of meeting competing demands or considering divergent ideas simultaneously'' (Smith and Lewis 2011, p. 386).

Drawing upon Poole & Van de Ven's (1989) research, this paper focuses on how the Biophilic Organization could manage pertinent specific tensions as identified recently by Hahn et al (2014) in this journal. Beyond the obvious demands and tensions between the social, environmental and financial and short-term versus long-term orientation, they identify three more exemplary (but not exhaustive) tensions which cut across these core dimensions:

- i) Efficiency versus resilience of socioeconomic systems,
- ii) Personal versus Organizational Sustainability Agendas
- iii) Isomorphism versus institutional change,

Moreover, the key challenge here is how a synthesis strategy can incentivize businesses to tackle the demands which are normally sidelined when conflicts occur. For example, reflecting on the above tensions, the wider research question is how say a long-term, resilient, bottom-up and structural (systemic) change orientation could be made more prominent considering the predominant focus on short-term, efficient, top-down, isomorphic compliance within corporate sustainability. As Hahn et al. (2014) argue, as short-termism is rife in business, implementation of organizational practices that induce managers to take more notice of long-term considerations is needed.

Whilst the structure of this paper will focus its attention on how the Biophilic Organization could offer a synthesis strategy for the Resilience versus Efficiency tension, the Personal versus Organizational tension and the Isomorphism – Institutional Change tension, it explicitly recognizes the influence of the other corporate sustainability tension, as identified by Hahn et al (2014): the Short - Long Term tension. In order to illustrate the potential of the Biophilic Organization, it will provide several examples from the Singapore and US healthcare sector, in which related fields of Biophilic Design (Kellert & Wilson, 1993) , Generative Design (Hillier, 1996) are being utilized. Finally it will explore how Taoist beliefs of a leading Chinese business leader could provide a possible emergent institutional incentive for enacting the Biophilic Organization.

## **2.0 A Rationale for ‘The Biophilic Organization’ Metaphor**

As Nunez (2012) highlights, rituals and symbolic practices such as metaphors are the main cultural drivers that allow us to connect with the central narrative of organizations. Carolan (2006) and Monteiro & Keating (2009) have advocated the use of metaphor to overcome language/jargon differences through advocating a common narrative language in helping us make this analogical translation from the familiar to the unfamiliar (Mcgregor, 2004). This metaphorical focus reflects arguments by Starkey and Crane (2003) who highlight that de-familiarizing bio-cultural narratives, require compatible conceptual hooks around narrative language, structure and content in order to gain broader legitimacy and engagement. In order to gain this wider sense-making currency, it is argued here that an appropriate metaphor draws on

the spirit of forging a stronger link to an analysis ‘outside’ the field of business management and organizational studies.

In search of a suitable metaphor, François (2002) offers the idea that we need to look for isomorphies, derived from scholarship in living systems. It refers to looking for common, predictable patterns instead of separate ideas. Following this lead, Wheatley (1999) urges us to look for patterns in nature because nature is replete with similar forms (the Greek meaning of iso-morph). Such patterns help us move away from the disparate semantics of individual disciplines toward a purer language, a set of concepts that is not influenced by each discipline’s opinions and prejudices. These patterns provide a template for us to find similarity between disciplines that are not alike (McGregor, 2004).

In order to identify an appropriate root organizational metaphor which identifies such a connecting pattern, this paper concurs with Starkey and Crane (2003), who argue for evolutionary psychology as a suitable discipline which informs, legitimises and engages through its human-nature narrative. More specifically focusing on identifying a human-nature root metaphor, it draws on a hypothesis originally proposed by Kellert (1997), The Biophilia Hypothesis, which claims that humans possess a biologically based attraction to certain aspects of the natural environment and that their well-being depends, to a great extent, on the relationships with the surrounding natural world (Wilson, 1984; Kellert, 1997; Ulrich, 1993).

With this in mind, ‘The Biophilic Organization’ is introduced here as a new root metaphor, or *raison d’être* for organizations, defined as follows:



*‘An organization which enhances a bio-cultural connection with the natural environment’*

In the context of sustainability, the overarching potential implication of introducing the human-nature evolutionary narrative of the Biophilic Organization metaphor, is that such a heuristic notion reminds us that an organization with bio-cultural restoration as central to its core mission could act as a different, other, mirror space and time. The evolutionary narrative of the Biophilic Organization could provide the corporate sustainability challenge with a sense of individual and collective temporal meaning and reflection. As Callinicos (1995, p. 49) argues, narrative in itself is one of the chief ways in which we cope with the "experience of temporality", and narratives structured in terms of evolution can extend the temporal frame in which we perceive our experience. Such narratives have the capacity to profoundly affect our psychological states, our value systems, and our commitment to new ways of working (Barlow, 1997, pp. 228-229). Compelling stories also can help us make sense of the passing of time and reassure us about our position in time, space, and the general scheme of things. For the eco-science writers, the evolutionary narrative has the potential to give us the sense of a concept of "green time" (Barlow, 1997, p. 219), revealing the irreversibility of the past and the inherent uncertainty of the future (Best & Kellner, 1997, pp. 195-252). But the lengthening of time scale that accompanies an engagement with the evolutionary narrative, presents us with a major dilemma: the conflict between the demands of the present and investment in the future. The Biophilic Organization may provide us with perspective which integrates long-term and short-term demands, based on a temporally extended concept of self-interest. Adopting a view of the long range course of

evolution would allow us to see beyond the blind imperatives of short-term self interest and to envision the history and future of our own genes, and our own organizations, against the background of the entire human species (see Wilson, 1978, p. 197). This focus on the evolutionary, ‘green time’ narrative and Biophilic Organization metaphor thereby answers a call for research which take account of the inter-generational equity, time dimension of sustainability (Lozano and Huisingh, 2011).

### **3.0 The Enactment & Synthesis Potential of the Biophilic Organization**

This section will explore how the notion of the Biophilic Organization could be enacted within business and potentially provide a synthesis strategy for the competing tensions of corporate sustainability, as identified by Hahn et al. (2014). Moreover, as current corporate sustainability strategies primarily revolve around short-term, efficient, top-down organizational agendas focusing on institutional compliance, the following sections represent how the Biophilic Organization could incentivize and elevate the long-term, resilient, bottom-up agendas focusing on institutional change by drawing out possible advantages to embracing such a tension. In order to illustrate the synthesis potential of the metaphor, the paper explores the emerging architectural fields of ‘Biophilic Design’ and ‘Generative Design’. Finally, it explores the synthesis potential of a ‘Taoist Cultural Context’. In terms of structure, it will specifically focus on how Biophilic Design could potentially act as a synthesis strategy for the tension between resilience versus efficiency demands. It will also focus on how Generative Design could potentially act as a synthesis strategy for the tension between the personal versus organizational sustainability

demands. It will finally focus on how Taoist beliefs/ cultural context could potentially act as a synthesis strategy/context for the tension between isomorphism and institutional change.

### **3.1 A Rationale for Biophilic Design**

Recently, architects used the principle of biophilia to guide their designs in fostering sustainable buildings, calling this approach, 'Biophilic Design'. Biophilic Design is the deliberate attempt to translate an understanding of the proposed inherent human affinity to affiliate with natural systems and processes (Kellert and Wilson 1993) into the design of the built environment. In 2006, the world's first biophilic design master's program was introduced at Yale University, a collaboration between the schools of architecture and of forestry and ecology studies. Biophilic design injects real or simulated natural components into living and working spaces to promote emotional and physical wellness. Morning sun exposure, water features, natural vistas through window-walls, sky-ceilings, and greenhouse rooms where plants dominate and restore air quality while providing an indoor forest refuge are some common applications of this recent design extension.

Three core concepts underpin the tenets of biophilic design: As Kellert et al. (2008) highlight these are as follows: Nature in the Space, Natural Analogues, and Nature of the Space. Nature in the Space refers to the incorporation of plants, water and animals into the built environment. Examples include potted plants, water features, aquariums, and courtyard gardens, as well as views to nature from the inside of a building. These direct connections to nature—especially dynamic nature that incorporates movement— produce the strongest biophilic reactions. Natural

Analogues are one degree of separation away from nature. Natural Analogues are materials and patterns that evoke nature and are characterized by four broad types: representational artwork, ornamentation, biomorphic forms, and the use of natural materials. Pictures of trees and water, building elements that mimic shells and leaves, furniture with organic rather than geometric shapes, and visible wood grain fall under the umbrella of natural analogues. Nature of the Space, a similar concept, refers to the way humans respond psychologically and physiologically to different spatial configurations.

As a key proponent of Biophilic Design, Timothy Beatley (2011, p.113), points out, the Khoo Teck Puat Hospital (KTPH) in Singapore represents a pertinent example of Biophilic Design. Beatley (2014) highlights that the facility “is perhaps the greenest, most biophilic hospital in the world”. He argues that it is special as it is specifically designed to be a hospital in a garden: ‘there are plants and greenery everywhere, and many of the patients’ windows look down on a large green interior complete with waterfall and meandering stream complete with native fish’. He describes the facility as having extensive gardens found on different levels, planter boxes in windows and along balconies, and even a large urban farm on one the rooftops, compete with 140 fruit trees. The hospital integrates food producing roof gardens, green walls, green balconies and a public garden, using the concept that ‘nature would nurture’ (Singapore Design Council, 2011).

Whilst there are many other eco-efficiency, technological features of the hospital, including extensive use of photovoltaics and a complex energy strategy that includes sunshades and natural ventilation, this hospital explicitly seeks to provide a home for the wide ranging biodiversity found on this tropical island city (Yen, 2012). Indeed, in an interview by Beatley, Liat Teng Lit,

the CEO of KTPH, he explained that he and his staff judge the success of the organization in part by the numbers of butterflies and birds seen in and around the hospital, and there are prominent wall placards that track the running totals of species sighted (Beatley, 2014). Even the stream and water feature is a chance to support native fauna, with some 92 native species of fishes found there. As Liat (Beatley, 2014) explains: “Just as the rest of the world is chopping down all the rain forest, we declare ourselves as the Noah’s Ark of tropical rain forests. That means we consciously with every single project bring back a few species of tropical rain forest.”

### **3.2 Biophilic Design: A Synthesis Strategy for Resilience versus Efficiency Tension (Hahn et al., 2014)**

The paper now turns to why business committed to sustainability would balance the managerial demands such as eco-efficiency with the elements of Biophilic Design as part of the Biophilic Organization? Could business, espousing their sustainability credentials, remember to temper their performative enthusiasm for eco-efficient buildings and practices and embrace the possibility that Biophilic Design may reduce the optimal eco-efficiency of their buildings. For example, large glazing areas of high-visible-transmittance glass, operable windows, and indoor-outdoor spaces that connect people with nature, may carry significant energy penalties. On a different level, providing large open areas around buildings—to serve the evolutionarily based desire to look out on savannah-like vistas that many biophilia proponents suggest we have, may conflict with the strategy of high-density development, or may encourage sprawl and development of green-field sites.

The argument put forward here is that Biophilic Design may further the notion of a resilient workplace rather than an eco-efficient workplace. This in turn acknowledges that a tension exists between efficiency and resilience within corporate sustainability, as identified by Hahn et al. (2014). This paper concurs with Korhonen and Seager (2008) who argue that it may be beneficial to adopt practices that may be inefficient, but supportive of a systems-wide, long term view of sustainability, such as that provided by Biophilic Design. They argue for a focus to be placed more on the concept of resilience, which was first developed in ecology to describe the capacity of a natural system to recover from perturbation or injury (Carpenter et al. 2001). As Hahn et al. (2014) point out, analyses of the sustainability of economic systems suggest that efficiency considerations need to be complemented by the notion of resilience. High resilience is linked to high diversity. Efficiency can often be increased through concentration, homogenisation, standardisation and centralisation, leading to economies of scale; yet these practices tend to lead to lower diversity (Schutz 1999). As each firm aims to increase its efficiency at the organisational level, both intra- and inter-firm diversity and resilience on the systemic level are reduced.

In terms of the systemic sustainability challenge, Korhonen and Seager (2008) argue that in order to enhance workplace resilience it is important to invest in system diversity, adaptability, flexibility and reserve capacity. Could Biophilic Design answer the question by Heerwagen and Bloom (2011) who ask whether we can intentionally develop this resilient capacity to adapt and cope by drawing on lessons from the natural world? What is the diversity of impact and synergy from Biophilic Design? Put in the context of this paper, what is the diversity of bio-cultural systemic outcomes of organizations which have implemented Biophilic Design?

Focusing primarily on the healthcare sector as an illustrative example, this paper is complementary to reports such as by Terrapin (2012) which highlights that current Biophilic Design incorporating even the smallest elements of biophilia into the healthcare industry can improve a diversity of outcomes for both patient, family and hospital staff. However, this paper and its embrace of sustainability tensions, fundamentally moves away from the Terrapin (2012) report, with its central focus around the economic ‘win-win’ justification for Biophilic Design.

In terms of medical outcomes for patients, the Terrapin report (2012, p.15) highlights that, “over fifty studies have been published that associate biophilic elements as primary influences for faster recovery rates for patients, decreased dependency on medication, reduced staff and family stress, and improved emotional wellness as a result of natural daylighting and views to nature”.

The Terrapin report (2012), whilst primarily focused on making the economic case for Biophilic Design also highlight the wider impacts on hospital patients, visitors and staff. The report cites Marcus & Barnes (1995) study of four independent hospitals which found that 95% of all visitors reported feeling more relaxed, less stressed, rejuvenated, positive and more able to cope with the situation). Similarly, the Terrapin report (2012, p.18) reflect on how hospital staff show improved recovery from stress, are more alert and perform better recover when provided with access to biophilic features.

Reflecting on the wider resilience outcomes of Biophilic Design (Kellert et al, 2008), Richard Forman, a professor of landscape ecology at Harvard University and a widely published author in the landscape design and planning fields, argues that, in addition to the anthropocentric

benefits of buildings, biophilic design offers significant benefits to nature itself. He argues that structures can be designed to provide habitat for targeted rare species, to enhance surrounding natural systems, to attract the richness of fine-scale nature on the texture of building surfaces. Biophilic structures can also be designed to educate people—leading to nature protection elsewhere. Of course, this wider educational impact could form part of a wider engagement synergy of the Biophilic Organization.

Could the dynamics of these multiple social, environmental impacts emerging from Biophilic Design be important for the long-term optimum in sustainable development of complex economic–social–ecological systems. Similarly, Heerwagen and Bloom (2011) define the resilient workplace as a system of interlinking components, none of which alone will generate resiliency. But in combination, they create synergies and mutual reinforcements that will drive the co-evolution of behaviour and place toward resiliency. Rather than viewing Biophilic Design as leading to a decrease in efficiency, could managers, architects and the increasingly vocal shareholders not only tolerate but embrace the multiple impacts around Biophilic Design, where such a resilient space could be viewed as where sustainability problems and more systemic solutions can and are allowed to occur. As Heerwagen and Bloom (2011) argue, a resilient workplace requires a shift in the way we think about, use, and value space.

A possible example of how Biophilic Design is offering a way to manage the tension between organizational efficiency and wider systemic resilience is the afore-mentioned Khoo Teck Puat Hospital (KTPH).



What makes this hospital distinctive is the way in which it has been able to simultaneously adopt eco-efficiency and wider resilience measures even though it recognizes that both elements are not always complementary. This represents an acceptance strategy as defined by Hahn et al. (2014) which requires decision-makers to simultaneously pursue activities that enhance efficiency and activities that increase diversity, even when these are conflicting.

Kellert (2012) maintains that no matter how energy efficient a building is, “if it’s a place that doesn’t breed satisfaction, enhance morale, or motivate people (and in fact alienates them) ... when the cutting-edge technology that made it energy efficient is no longer cutting edge, and people don’t want to be there, they won’t sustain that environment.” (Cooper, 2008). Kellert admits that there are times when biophilic objectives will conflict with energy-efficient design, “but you must try to have your cake and eat it too,” he says. “It’s tougher, but if you want sustainability, you must weigh these objectives and blend them.” (Ruiz, 2012)

For example, considering that there is no healthcare-specific environmental management system, KTPH adopted Singapore’s universal green rating system, the BCA Green Mark. This was introduced on a voluntary basis in January 2005, followed by mandatory compliance in 2007, illustrating Singapore’s resolve in eco-efficiency measures particularly around bringing energy consumption in check within the design and operation of green buildings in Singapore (Yen, 2012). KTPH was certified as Green Mark Platinum in 2010, the highest award under the BCA Green Mark Scheme. However, in focusing on technical performance of the built environment, whilst addressing the issues of reduced consumption of energy and resources, Green Mark does not address wider social and ecological dimensions of sustainability (Yen, 2012, p.121). As

Korhonen and Seager (2008) highlight, the dominant efficiency and eco-efficiency definitions lack a temporal, social and cultural dimension. They argue that in complex, qualitative, uncertain and dynamic coevolving economic–ecological systems eco-efficiency measures like the Green Mark might actually increase risk, vulnerability and unsustainability. This indicates that the social and ecological dimensions would have to be generated independently from the Green Mark rating system, as discovered within the visioning and objectives-setting efforts of the KTPH design process.

In order to realize such a wider social and ecological attention the hospital explicitly relates its biophilic organizational strategy to the wider commitment of Singapore and engages with its various municipal actors in becoming a Biophilic City. This follows Beech et al. (2004) who highlight that acceptance strategies may entail discussions between actors at different levels to foster a better understanding of the tensions and arrive at creative solutions. When both the hospitals and government cooperate like this, they acknowledge the relevance of the other party's interests, even if these do not match, at least not in the short term (Penker 2008).

KTPH has recognized the importance to invest in system diversity, adaptability, flexibility and reserve capacity to preserve resilience. As Korhonesn and Seager (2008) argue. materials and energy flows extend across organizations into the wider institutional environment. Cooperation networks benefit from diversity in the actors involved so that there is always spare capacity in the system. Maintaining those activities, functions and actors that are perceived and conceptualized as inefficient now can be important for the long-term social, ecological and economic future.

KTPH has thereby acknowledged that it is part of Singapore's 'City in Garden' agenda, which aims to gain a competitive advantage in various green technology markets and a leading edge in the global environmental sector workforce (SBEnrc, 2012). According to the head of Singapore's Lee Kuan Yew Public Policy Centre, Dr Balakrishnan, at the World Cities Summit in 2012, "cities that provide a green and welcoming environment soothe their citizens and gain a competitive advantage...people want to stay and invest in your economy" (SBEnrc, 2012, p.15). This strategy has developed to point where city of Singapore has devoted approximately half of its ground area to nature and greenspace. As Beatley (2011, p.46) remarked, this is a particularly "impressive achievement in what is a very dense city".

Moreover, there is a recognition across Singapore's municipal strategy that Biophilic Design makes the city internationally competitive for investment, enhances property values and the urban aesthetic, improves health and well-being, reduces stress, increases walking and cycling rates (Lang, 2008), and provides ecosystem services (Singapore Environment Council, 2008). Singapore, having no natural resources, is "economically reliant on being an attractive place for top talent to live and work, and for companies to base their operations" (SBEnrc, 2012, p.30).

Of course, key to this strategy is the strong relationship the city has with Singapore's hospitals. Therefore, what is pertinent here is the fact that the Khoo Teck Puat Hospital has a wider incentive to not solely focus on eco-efficiency measures but to also contribute to a city wide resilience strategy. This resilience was demonstrated through a 2011 post-occupancy survey (Sng, 2011, p.74), which reported that besides being a top Green Mark Platinum certified green

building, KTPH has “provided for natural and social environments well to a reasonably large extent.” From among sixteen features, the most noted and welcome features of KTPH were the integration of nature into the KTPH practices.

### **3.3 A Rationale for Generative Design**

In order to complement such Biophilic Design, this paper moves beyond the descriptive and deterministic and introduces the emerging architectural notion of the ‘Generative Design’ to culturally enact the Biophilic Organization, in a reflexive and heuristic fashion. It is argued here that this inclusion could prove an invaluable intra-generational social/cultural complement to the ecological orientation of Biophilic Design.

A generative building creates margins or excess material, cognitive, political and emotional space capacity, slack or margin that continually enables different and even opposite interpretations and uses and experiences (Koolhaas, p. 1995). It is pertinent to note that a generative building is not be driven by the functionalist belief that form follows function. The generative building does not attempt to occupy an entire space, does not determine rooms for functions. Instead, it implies that space has to contain possibilities and potential for subversion. This notion of embracing of potential space reminds us of Winnicott’s (1971) ideas around potential or intermediate spaces. As Steyaert (2006, p. 249) points out about Winnicott’s ideas, “The explorations a child makes are literally formed in the interspaces between the parent and the child itself; if the parent stays too close there is no space at all; if the parent is too far, the child feels lost in a too-open space. Exploring and making its own space depends to a big extent on such interplay with the parent or any other significant person. The potential space is both real

and unreal: in exploring the boundary the child learns and constructs the boundaries of its own self.”

Similarly, Koolhaas (1995, p. 603) highlights that Generative Design could be viewed as the ‘strategy of the void’: where the most important parts of the building consist of an absence of building. Such spaces are capable of transforming themselves while being (ab)used and occupied by different people only temporarily. A generative building invites its inhabitants to become ‘illegal architects’ (Hill 1998), (ab)using and (re)defining space according to the context and situation i.e. the human-environment interaction. Illegal architects utilize established power and its architectural manifestations, opening up closed spaces and temporarily closing open spaces, and hijacking designs — a process which Goodman (1971) calls ‘guerrilla architecture’. Generative buildings are what Rudofsky (1964) has called ‘architecture without architects’, a ‘non-pedigreed architecture’, planned anonymously, emerging spontaneously, changing unpredictably, shaped by the creativity of the users and developed just-in-time (De Certeau 1984).

Therefore, this paper argues that only through the emergent, bottom-up notion of the Generative Design, could different actors possibly enact and embody a ‘Biophilic Experience’. It is this notion that is crucial in achieving change towards sustainability (Leach, 1998). As Lefebvre (1991, p. 59) argues, “‘Change life!’ ‘Change society!’ These precepts mean nothing without the production of an appropriate space....new social relationships calls for a new space, and vice versa”.

### **3.4 Generative Design: A Synthesis Strategy for Personal (Bottom-up) versus Organizational Sustainability Tension (Hahn et al., 2014)**

The paper now turns to the possible tension between the organizational sustainability agenda of Biophilic Design and the social and personal emergent agendas of the different corporate sustainability stakeholders? Could business be able to temper their enthusiasm for Biophilic Design and embrace, within the design and post-design process, the possibility that different emergent designs may emerge which could reduce what could be perceived as the optimal Biophilic quality of their buildings. As the core intent of the Biophilic Organization metaphor is to enhance a personal emotional affinity with the natural environment, could Generative Design be crucial to socially balance the tension with an organizational, top-down agenda of Biophilic Design? From an epistemological perspective, the emotional narrative of this Biophilic Organization metaphor concurs with Shrivastava & Ivanaj (2012) who assert the importance of developing an emotional and passionate relationship to nature, as a prelude to making “improvements” to it. Instead of treating nature as yet another subject for top-down architectural scientific study or managerial strategic plan, to be studied along siloed disciplinary lines, could Generative Design offer an emotionally and aesthetically empowering perspective, reflecting a more holistic consideration of the biophysical environment and human-nature relations. Moreover, in line with Dey and Steyaert (2007), the inclusion of Generative Design within the Biophilic Organization has the potential to expand the process of knowing beyond its cognitive limits to all senses, reintroducing “the body, the emotions, the affective mode of understanding, intuition, receptiveness, empathy, introspection and aesthetic understanding” (Gherardi, 1999, p. 110). As Taylor and Hansen (2005) argue, corporate sustainability could embody such artful,

participative constructions and productions, such as poetry, music, painting and drama, to tap into the aesthetic sensibilities of different actors. However, Warren (2002) warns us of the managerial manipulation of a workspace around deliberate aestheticisation. She reflects on her research in a web-design department of a large IT firm where the designers saw such top-down aesthetic manipulation as artificial and counterproductive. Their management had introduced a pool table, a micro-scooter, massive Russian dolls and a 'think tank' brainstorming room to stimulate creativity within their designer staff. However, for these designers such aestheticisation needed to be autonomous and spontaneous and the key issue for them was to provide performative-free opportunities for creative freedom and play. Pertinently, the designers' creative freedom could be found through their diverse bio-cultural connection. As Warren (2002, p.16) points out, "true aesthetic experiences (from which their creativity followed) were to be had away from the office, in amongst the trees and the fields surrounding the company's buildings. For these people, the idea of freedom in various guises was what they prized above all else: freedom to work as they chose, freedom to play, freedom to express themselves as they wanted to be recognized." Clearly any top-down biophilic attempts at bio-cultural aestheticisation needs to be held in tension with the freedom to find our generative, personal, bio-cultural aesthetic sensibility. Could Generative Design offer a synthesis strategy for such a tension between the personal and organizational biophilic and sustainability agenda by formally embracing spontaneity and improvisation from the top-down? As Hahn et al. (2014) argue, management could shape emergent sustainability agendas through interaction with organisational members i.e., "through promoting everyday improvisation, and through creating conditions and incentives that foster diverse networks" (Fenwick 2007, pp. 642–643). The challenge for management is to create an organisational context where the confrontation of diverging agendas

nurtures a productive process of progress (Sundaramurthy and Lewis 2003). As Hahn et al. (2014) point out, while this does not mean that all personal agendas will be fully reflected in the organisational agenda, a synthesis strategy such as Generative Design will integrate personal agendas into the strategy-making process.

An example of how Generative Design is complementing Biophilic Design can be drawn from the healthcare sector. The Ann & Robert H. Lurie Children's Hospital of Chicago is the 2012 winner of what is called the 'Generative Space Award', with the aim "to identify and recognize health and healthcare settings —from around the world—where the focus is on improving human health through innovative design of the environment and as a result, individuals, organizations, and communities flourish" (Ann & Robert H. Lurie Children's Hospital, 2012).

At 23-stories, the hospital is the tallest children's hospital in the world, integrating inpatient and ambulatory care, diagnostic and treatment spaces, and clinical support. Apart from introducing Biophilic features such as the Crown Sky Garden, an interactive indoor garden located on the 11th floor, the distinctive generative feature of this hospital is the way it has engaged many different actors. The hospital endeavored to create a unique child-friendly environment to promote healing, education, and discovery. A Childs' Advisory Board, made up of past and present patients, contributed ideas and artwork for "their" new hospital. Furthermore, they recommended that each patient room should be designed to look more like a bedroom, with storage nooks and Internet hook-ups. Moreover, they recommended that spaces throughout the hospital provide both comfort and welcome distractions for children during their visit or stay.



Similarly, a Family Advisory Board was consulted for suggestions about how the hospital could be designed to help families better support the healing process. As a result, Lurie Children's offers more spaces and services for families, including sleeping quarters in private patient rooms, family lounges, and a hotel-like sleep room.

Finally, more than 800 Lurie Children's employees and physicians were involved in design process. The ensuing decision to include only single patient rooms had an impact on increasing nursing unit design and as the units become larger it impacts nursing efficiency, communication, and culture. As there was a desire to reduce nurse travel time and walking distance and to provide an optimal proximity of caregivers to patients, this resulted in a decentralized nursing model. Furthermore, following this dialogue process, the hospital created recessed space rather than adding a vestibule, which meant that the area within the patient room itself was preserved and allowed nurses to sit outside the room without blocking the movement of a patient or equipment.

In terms of wider aesthetic, local community dialogue inputting into Generative Design, the hospital has sought out partnerships with more than 20 leading cultural and civic organizations throughout Chicago, in partnership with the hospital and design team to help make Lurie Children's Hospital an engaging and healing space for patients and their families. This has resulted in each of the hospital's 23 floors featuring special, child-friendly designs with unique art and interactive exhibits that celebrate the diverse make-up of Chicago and to incorporate an overall theme of "What Makes Chicago Distinctive," into the design of the public and family spaces (Ann & Robert H. Lurie Children's Hospital, 2012).

For example, working with the John G. Shedd Aquarium, a near life-size model of a mother whale and her calf, by the artist Victor Joyner, were raised 24 feet into the air and installed on the ceiling of the hospital's Pritzker Foundation Lobby during a Whale Awareness Raising Celebration on December 7, 2010.

Similarly, the Art Institute of Chicago selected 49 reproductions from their collection that reflect themes of home and family, animals and nature. Alongside these are childrens' interpretations of these artworks. In addition to reproductions based on the collection, five artists designed original boxes, displayed in the care station desks at a child's eye level. The nature themed waiting room also displays a three-foot high replica of one of the famous Art Institute lions, across from a full wall-sized reproduction of Georges Seurat's iconic *A Sunday Afternoon on the Island of La Grande Jatte*.

What is particularly pertinent here is the way in which this diverse dialogue has not only developed hospital design which meets emotional and social needs of patients, staff and family not necessarily connected to Biophilic Design but has also developed an emergent, rather than planned bio-cultural theme as well, particularly arising from the arts and cultural community partnerships, which rather than conflicting with the organizational agenda have been synergistic. Therefore, this example illustrates a pertinent synthesis strategy for wider personal agendas versus organizational agendas. As Ruga (2013: 2) argues, "the new Ann & Robert H. Lurie Children's Hospital in Chicago is a leading example of how generative space can be effectively used to not only improve lives and organizational performance, but it also demonstrates how an innovatively designed caring environment can be used to improve the overall well-being of a broad community. As a recipient of the Third Annual Generative Space Award, this project is a

living classroom for the advanced study of applying generative space to a large-scale medical institution and as such it is well-deserving of receiving this distinguished acknowledgement.”

### **3.5 A Rationale for Taoist Cultural Context**

This final element of the Biophilic Organization is crucial as it explores the possibilities of where in the world the institutional enactment of the metaphor could be embraced and has the most pressing need. It is proposed here that China could provide such a context.

This need is exemplified by the substantial environmental and human cost of China’s impressive economic development. For example, as the top SO<sub>2</sub> emitter in the world, China has increasingly serious pollution-related mortality and morbidity (Ip, 2009). Furthermore, since 2000 China alone has accounted for two-thirds of the global growth in carbon-dioxide emissions. Despite a huge hydroelectric programme, most of this energy comes from burning coal on a vast scale. China currently burns about half the world’s supplies. China’s impact on the climate is unique as its economy is not only large but also resource-hungry. It accounts for 16% of world output but consumes between 40% and 50% of the world’s coal, copper, steel, nickel, aluminium and zinc. China’s wildlife is under particular threat. The China Species Red List, an official document, classified almost 40% of the country’s mammals as “threatened” in 2004 (The Economist, 2013). However, despite its many environmental problems, this paper paradoxically reflects on whether China’s Taoist cultural context could act as a complementary institutional incentive and driver for the enactment of the Biophilic Organization. Focusing on Eastern philosophies more generally, as Waistell (2012) argues, Buddhism and Taoism possess certain similarities, both seeking to control desire through non-attachment to material things, thus encouraging contentedness. The traditions are also similar in their emptying of self to develop a non-

anthropocentric unity with nature, achieved through meditation. However, Buddhism can learn from Taoism's focus on nature as the way. Lau and Ames (1988) particularly focus on Taoism as they argue that it is a philosophy of action that describes humanity as inescapably part of nature rather than in any way separate from it. The overriding emphasis is on working in harmony with nature, not exploiting it in a narrow-minded pursuit of profit. As Waistell (2012) argues, Taoism even shifts our very notion of wealth to the number of different species and the health of their diverse habitats.

More specifically, drawing from its distinctive differentiating perspective of 'nature as the way', Tao could be pertinent as it has been considered as the way or essential pathway in which the Tian (Universe) evolves (directly translated as 'Sky'). Although Tao has become a key concept in discussing Chinese philosophy in relation to organizational studies (see Durlabhji, 2004; Chen, 2002; Rahschulte, 2010) and has been applied to corporate social responsibility (Wang & Juslin, 2009) and environmental preservation and restoration (Waistell, 2012), Tian remains as a concept seldom touched in academic research despite Tao being merely the reflection of Tian's progress. In fact, Tao, in Chinese, is also called Tian Tao to reflect the importance of understanding the universe (Tian) and natural environment. Tian is so important in social practice that the Emperors in Chinese history have been called as TianZi, (the son of the Sky), to demonstrate their authorities. Not surprisingly, Tian Zi leads rituals to worship the universe and confirm that their management of the nation is to merely execute the way Tian progresses, which is Tao. Tian Zi shall meet the expectations of Tian by following Tao.

In the context of the current significant environmental crisis, Tian Tao offers a radical proposition that we should take no action that is contrary to nature. Of course, this paper must

recognize that Taoism is not always wholly in accordance with sustainability. For example, not all Taoist texts support deep ecology and non-anthropocentrism (Birdwhistell, 2001). Paper (2001, p. 12) criticizes deep ecologists who seek support for their views from Taoism, arguing that their stance is an ahistorical, overly literal, modern, western interpretation that relies on two enigmatic texts and states “that a Western Taoism can solve a crisis assumed to be brought on by and unredeemable through Western thinking implies a logical contradiction.” Furthermore, although nature is a sacred space for Taoists, it does not necessarily follow, in the immediate term, that they act in an environmentally positive way (Miller, 2003). However, Taoism’s focus on a particular spiritual, aesthetic and emotional pathway towards bio-cultural reconnection could have major implications for organizations in their long-term pursuit of sustainability. In terms of compatibility with the evolutionary inspired Biophilic Design aspect of the Biophilic Organization, it is most pertinently reflective of the Taoist belief that all we experience and all we are taught “carve” away pieces of our original simplicity. Taoists try to regain that early sense of unlimited possibility that children have by trying to “unlearn” things until everything becomes a new experience (Toropov & Hansen, 2002). Kraemer (2006) adds that such a beginner’s mind is an empty mind, not full of preconceived notions and prejudices and thus ready to experience the world.

### **3.6 A Taoist Cultural Context: A Synthesis Strategy for Isomorphism versus Institutional Change Tension (Hahn et al., 2014)**

The final tension focuses on how business could manage the tension of reacting to the predominant institutional economic and political pressures and established business practices whilst simultaneously acting as a proactive driver and innovator around systemic social and

ecological change (Midttun 2007). In the context of a new organizational metaphor, such as the Biophilic Organization, it is important to recognize institutional theory which suggests that firms face institutional pressures to comply with norms for legitimate behaviour, leading to isomorphism. It is argued here that these pressures are particularly pervasive in the Chinese institutional environment considering China's current enthusiasm for free-market economics, hi-tech industrialization, consumerism and the lingering effects of the Cultural Revolution around discarding the traditional values and beliefs of the past in favour of a perceived socially beneficial materialism of Marx and Mao (Birkin et al, 2010).

However, as Birkin et al (2010, p.67) point out, whilst "China expands its involvement in global markets, its companies are simultaneously subject to more of the pressures that bring about reforms in western companies: stakeholder influences, supply-chain issues, product and waste liabilities, life cycle assessments and voluminous legislation." Increasingly Chinese companies will have to compete openly on this basis and thereby improve their social and environmental performance. However, does this mean that they follow business models to those in the west or will they follow a more distinctive, cultural nuanced business model? There are aspects of Chinese culture and society, such as Taoism, that make such radical, contextual change more likely and potentially very different from change in the West. As Birkin et al. (2010, p.67) argue, "these aspects will have subtle and long-term but nonetheless substantial effects, since they affect the Chinese worldview", which at deeper levels remain pervasive, influential and in ascendance in China (Alexander, 2006). As far back as 2007, President Hu Jintao endorsed religious charities and their usefulness in solving social problems. The central government has

also recently sponsored international conferences on Buddhism and Taoism. Furthermore, local governments have welcomed temples, albeit to raise money from tourism.

As Birkin et al (2010) speculate, to what extent sustainable development pathways may draw upon the deep-seated cultural beliefs of the Chinese people is more than a matter of idle speculation. They move on to reflect that if the ancient Chinese beliefs can be revisited and merged effectively with the demands of a competitive, hi-tech industrial system the world as a whole stands to benefit. They also highlight that the successful implementation of sustainable development depends upon people and their culture, as has already been witnessed in the parallel experience of implementing corporate social responsibility: “Much depended on the extent to which the concept of corporate social responsibility had become an integral part of the culture. The more this was the case, the easier it was to communicate the norms and values underlying the concept” (Cramer, 2005, p.11).

This paper thereby responds to the call by Birkin et al. (2010) arguing for more research into the form that sustainable business models may take in China, which does not simply seek to blindly import western thinking and models. Moreover, by exploring the acceptability of the notion of the Biophilic Organization from a Taoist perspective, it allows the Chinese to fashion their own biophilic solutions with consequential greater commitment and meaning, creating truly responsible sustainable business models in ways not yet realized in the West.

An example of how the acknowledgement of Taoist cultural context is helping to manage the tension between the isomorphic tendency to adopt western free-market business practices and the potential of the Biophilic Organization to foster institutional change is now drawn from the case

of one of China's most dynamic and reclusive Taoist patrons, Zhu Tieyu. He owns one of the biggest home furnishings and construction materials markets in the city of Zhengzho, the five-story Phoenix City market, with more than four million square feet of showrooms. Besides Phoenix City, he also owns large tracts of land where he is developing offices and apartment blocks. Although he is reticent to discuss his wealth or business operations, local news media say his company is worth more than \$100 million.

In an interview with the New York Times within an article entitled the 'Rise of the Tao' (Johnson, 2010), Zhu, now in his 50s, surprisingly remarked that he once threw a man off a bridge for the equivalent of five cents. "He owed me the money," he recalled during a nighttime walk on the roof of Phoenix City with the interviewer. "And I did anything for money: bought anything, sold anything, dared to do anything" (Johnson, 2010). But as he explained, he began to think more about growing up in the countryside and the rules that people lived by there. His mother, he said, deeply influenced him. She was uneducated but tried to follow Taoist precepts. Zhu (Johnson, 2010) further elaborated, "Taoist culture is non-competitive and non-hurting of other people. It teaches following the rules of nature." Once Zhu started to pattern his life on Taoism, he says, he began to rise quickly in the business world. He says that by following his instincts and not forcing things — by knowing how to be patient and bide his time — he was able to excel (Johnson, 2010).

This nature-centered perspective is reflective of the basic Taoist principle of 'Wu Wei' and of course the central narrative of the Biophilic Organization. Kardash (1998) defines Wu Wei as behaviour that arises from a sense of oneself as connected to others and to one's environment. If one is to follow Tian Tao, it is necessary to adopt the modality apposite to Tao, namely that of



Wu Wei, meaning non-action. Moreover, it means not to take action that goes against nature. As Porter (2003) argues, Wu Wei is the cardinal tenet of Tao. Wu Wei, as set forth by Laozi in the Taodejing, proceeds by harnessing forces or patterns of energy already at play in the natural environment, and letting them carry us to our destination: “Non-action” denotes not inactivity but activity taken with rather than against the grain of existing aesthetic conativities. As Kardash (1998) argues, Taoists believe that one must be quiet and watchful, learning to listen to both one’s own inner voice and to the voices of one’s environment in a non-interfering, receptive manner. One develops and trusts one’s intuition as a direct connection to the Tian Tao. Moreover agents not only pursue their ends in ways that use, without unduly disrupting the self-directed unfolding of the natural environment, but they also ensure that the benefit they derive from the natural environment is reciprocated: That is, in seeking one’s own ends one chooses means that contribute to the conditions the natural environment needs in order to attain its ends. As Mathews (2011) argues, this reciprocation is in fact more specifically termed ‘Mutual Wu Wei’.

In a Chinese context, the above Taoist emphasis on relating individual decisions to making a positive impact on the natural environment could be significant in furthering the notion of the Biophilic Organization. Considering the significant political and economic isomorphic institutional pressures on business leaders such as Zhu in China, could underlying Taoist beliefs also place a primacy on how their individual decisions affect institutional change towards sustainability. As Lin et al. (2012) argue, Taoists have a weak tie to the organization’s and society’s expectations, traditions and standards and instead follow rules of nature without putting emphasis on artificial affection. Put in another way, if satisfying an organization’s and society’s

expectations could serve the natural environment positively, this would be conducive to such a Taoist orientation.

Zhu has certainly adopted such a perspective in the way he is engaging with the Chinese government by focusing his attention to Taoist philosophy and playing down religion. While the Communist Party has allowed religious groups to rebuild temples and proselytize, its own members are supposed to be good Marxists and shun religion. Like many big-business people, Zhu is also a party member. Two years ago, he became one of the first private business owners to set up a party branch in his company, earning him praise in the pages of the Communist Party's official organ, *People's Daily*. His company's Web site has a section extolling his party-building efforts and has a meeting room with a picture of Mao Zedong looking down from the wall.

In the meantime, Zhu's re-found Taoist beliefs appears to be supporting his efforts in riding the tension between being proactive in institutional change in China and reacting to the distinctive Chinese mix of governmental influence and free-market economics. With respect to the institutional change part of the tension, Johnson (2010) highlights that Zhu has certainly been busy spending a large chunk of his fortune on Taoist causes. The roof of Phoenix City is now a 200,000-square-foot Taoist retreat, a complex of pine wood cabins, potted fruit trees and vine-covered trellises. It includes a library, guesthouses and offices for a dozen full-time scholars, researchers and staff. His Henan Xinshan Taoist Culture Propagation Company has organized forums to discuss Taoism and backed efforts at rebuilding the religion's philosophical side. He highlighted that he has spent \$30 million on Taoist causes, a number that is hard to verify but plausible given the scope of his projects, including an office in Beijing and sponsorship of international conferences (Johnson, 2010). His goal, he remarked to the interviewer, is to bring

the philosophical grounding of his rural childhood into modern-day China. Zhu's chief adviser, Li Jinkang, says the goal is to keep Taoism vital in an era when indigenous Chinese ideas are on the defensive. "Churches are everywhere. But traditional things are less so. So Zhu said: 'What about our Taoism? Our Taoism is a really deep thing. If we don't protect it, then what?'"(Johnson, 2010).

In summary, this final section has offered a cursory glance at the potential of such Taoist beliefs in managing the sustainability tension of isomorphism and institutional change. Whether surfacing deeply held Taoist beliefs leads to the enactment of the notion of the Biophilic Organization in China and beyond is yet to be answered. It hoped that what it has achieved is to recognize the significance of a cultural context to the effective implementation of the metaphor.

#### **4.0 Conclusions**

This paper has introduced the bio-cultural metaphor of the Biophilic Organization in order to respond to the bio-cultural disconnection of many businesses which are espousing corporate sustainability. It has shown that such an organizational metaphor could be used as a central *raison d'être* for business to manage the tensions inherent in the wider sustainability journey. More specifically, the paper has illustrated this by showing how under the overarching metaphor of the Biophilic Organization, related architectural notions of Biophilic Design and Generative Design could provide a synthesis strategy for the perceived tensions of resilience versus efficiency and personal versus organizational agendas, responding to Hahn et al (2014) call for further research. Leading indicative examples, particularly drawn from the healthcare sector, have explored the possibilities of such architectural notions. Finally, the potential significance of

a Taoist cultural context for managing the tension between isomorphism versus institutional change was explored, through the example of a leading Chinese business entrepreneur.

Further empirical research is planned both in China and across the world, particularly around healthcare settings and settings impacted by Taoist beliefs. This research will track the longer term impact of Biophilic Design and Generative Design and to what extent the proposed metaphor of the Biophilic Organization is enacted within such settings. What is particularly pertinent from preliminary research is the way in which hospitals such as the Ann & Robert H. Lurie Children's Hospital are realizing both architectural innovations in realizing their systemic, role modeling sustainability agenda. As their submission to the Generative Space Award acknowledges, 'With a strong commitment to patients, families, staff, and the community, Lurie Children's, along with their design and construction team, has created a hospital environment that conserves energy, reduces water consumption, uses renewable resources, and recycles waste. The building is serving as a role model for sustainable and high-performance design for both healthcare and non-healthcare facilities alike.' (Ann & Robert H. Lurie Children's Hospital, 2012). Furthermore, this document points out that such role modeling has included becoming a Leadership in Energy and Environmental Design (LEED) Certified facility which is not only appropriate and manageable but also meaningful to patients, families, staff, and the wider community.

Moreover, research is also underway within the higher education, hospitality, and retail sectors. The choice of the latter two sectors is to move away from a limitation of this paper in focusing on the healthcare sector, with its distinctive, essential societal function, with a fundamental

mission to care for and heal the sick. In many respects, healthcare institutions are held to a higher ethical standard than virtually any other enterprise, as Hyman and Sage (2005) put it: to do good, not merely to do well. By focusing on other sectors without such an implicit societal function, this research will uncover the diverse institutional, organizational and personal tensions which will make the notion of the Biophilic Organization realizable or not, within a particular cultural context. Organizations such as Interface, Herman Miller, The Schumacher College, the Oberlin College, the University in a Garden are just a few of the possible avenues for future research settings around the metaphor of the Biophilic Organization.

It is speculated here that the embrace of different forms of temporal, emotional and aesthetic knowledge arising within these diverse organizations represent a shift towards the Biophilic Organization and this has the potential to fundamentally challenge and change the raison d'être of sustainability agendas of more mainstream organizations. This challenge is not only aimed at corporate architecture but fundamentally around the performative nature of sustainability strategies which do not have such emotional and aesthetic sensibility at their core.

The question here is not whether corporate sustainability management strategies need to blindly adopt a new bio-cultural metaphor but this paper has attempted to show how pertinent the Biophilic Organization metaphor is for managing the journey around the integrative perspective of corporate sustainability. Reflecting on such a journey, it is pertinent to note that the architectural inspiration for the Biophilic Organization is not only Biophilic Design but Generative Design as well. This reminds us that any journey cannot be totally pre-planned and needs to embrace the spontaneous emergence of surprising but socially equitable solutions. As

Kornberger & Clegg (2004) ask, do not social organization/ disorganization emerge as a product, a function of the spatial form it inhabits? Do not functions evolve from spatial forms? As Nietzsche (1968, p. 343) argued, form does not follow function: ‘the utility of an organ does not explain its origin! Thus, we can conclude that we should not look for solutions within a pre-given frame, but concentrate on forms and new spatial arrangements from where new functions emerge. Therefore, this paper’s focus has not been around introducing new sustainability strategies and sustainability performance functional measures but rather a new spatial metaphor which has the potential for multiple actors to focus not on how problems can be solved, but on highlighting new problems and questions within the context of current organizational metaphors (Venturi 1966, p. 17).

Finally, this paper has tentatively explored the significance of a Taoist cultural context to the potential adoption of the Biophilic Organization. Future empirical research in China would need to heed the advice from Ip (2001), who reminds us that China has many cultures, based on Confucian, Taoist, Buddhist, or Socialist principles, as well as different mixtures of them. However, the Chinese context appears to be a promising area for future research around the capacity of the Biophilic Organization to embrace sustainability tensions. As Shrivastava and Perrson (2014, p.55) argue, “In traditional Chinese thought, contradictions are an acceptable aspect or even the very essence of the flow of reality... China’s Communist-Capitalism is an example of overcoming the duality of Western thinking that juxtaposes Communism and Capitalism as opposites.” Other future contextual research could move beyond China and empirically explore the extent to which different national, sectoral and organizational actors enact such biophilic metaphors and embody the Tian Tao or other more pertinent spiritual

narratives. Of course, the Biophilic Organization, in a Chinese context could be enacted quite differently to say a UK organizational context, depending upon the process of trans-disciplinary interaction between say the government, shareholders, management, workers, NGOs, local community etc.

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