Design for Beauty:
Evolution beyond Sustainability

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Abstract

Mare (2011) argues that sustainability can be only an interim goal. There exists a realm *beyond* sustainability, beyond mere steady-state material maintenance, in which humanity may find its ultimate fulfillment and self-realization. It was further argued that the ubiquitous implementation of beauty will be the attractor that inspires the transition beyond sustainability. Design, as an emerging wholistic discipline, is the obvious vehicle by and through which to reach sustainability, first, and then to prepare for conditions beyond sustainability. A literature has been emerging around the concept and practice of 'sustainable design;' yet, it has been observed that this literature tends to emphasize a utilitarian perspective. Sustainability itself is generally perceived as the highly utilitarian enterprise of realigning human systems to operate within the constraints of natural systems. This tendency towards utilitarianism, while highly practical, misses opportunities to expand the sustainability project in preparation for a transition beyond sustainability. A new design – and thus noetic – framework is needed to reposition objectives from sustainability to a more fulfilling state beyond sustainability. The purpose of the current paper, then, is to inform this new framework by introducing beauty as a ubiquitous design criterion.

Introduction

A good way to begin this exploration is to make an initial survey of influential contributions that have set a precedent for what constitutes sustainable design. In congruence with the proposition that sustainability, in itself, as a societal-scale ontological condition, could be conceived as the transition from an anthropocentric to an ecocentric worldview (Mare, 2011), we find that sustainable design is usually portrayed in terms of designing with an ecological focus. The following, then, are foundational texts in this manner of thinking.

R. Buckminster Fuller (1968) called for a "design revolution," through which he theorized that the only way humanity would be able to rise from their current predicament – a predicament that today we call the sustainability crisis – would be through the broad-scale implementation of a "design science." Within the context of this multidisciplinary and multidimensional design science, the innate innovative creativity of the human mind would be harnessed and applied to the solution of societal problems. While Fuller made a mark for later generations by explicitly signifying *design* as the essence of the problem-solving process, the solutions he envisioned were invariably technical in orientation.

Zelov and Cousineau (1997), in an edited collection dedicated to Fuller, assembled an impressive collection of articles by "outlaw designers" – including many heroes from the 60s and

70s, such as Stewart Brand, Paolo Soleri, and J. Baldwin. Cousineau, recalling Fuller, says, "he saw the outlaw designer less as a renegade than a pioneer, someone living on the edge of the future, and usually enduring great resistance from the proponents of conventional wisdom" (p. xv). While *Design Outlaws on the Ecological Frontier* is an indispensable collection of design thinking, it is at the same time historically situated: it emphasizes the innovative spirit of the pioneering designers and their efforts to make the design science credible.

Ian McHarg (1967/1992) introduced into the public realm a groundbreaking book entitled *Design With Nature* – which, as its title suggests, elucidates a design process highlighting natural conditions. This process utilizes a layered mapping technique to vivify and bring to consideration all the environmental features and processes relative to a given design scenario. In the Preface to the 1992 reprint, McHarg explains:

> When *Design With Nature* was written sympathy for this ecological view was shared by only a small band of ecologists and conservationists. Its popular support came from the hippies, the flower people, those united in repugnance to the Viet Nam War and environmental degradation typified by Napalm and Agent Orange. The group was an aberrant minority but the intensity was high and it was very effective. *Design With Nature* spoke to this group and became a banner and an emblem (p. vi).

McHarg relates how writing the book was, in part, motivated by the appearance of environmental testimonies written by such notables as Rachel Carson, Barry Commoner, and Paul Ehrlich. Mare (2011) proposes that this fertile conceptual period initiated the emergence of an ecological consciousness presaging an ecocentric worldview, the prerequisite for sustainability.

John and Nancy Jack Todd (1994) also introduced a groundbreaking book, the culmination of years of exploratory work at their New Alchemy Institute. *From Eco-Cities to Living Machines: Principles of Ecological Design* is filled with innovative ideas for bringing the lessons of ecology to the application of real-world design solutions. John Todd is a biologist, a scientist; thus, his enumeration of principles – which could, by the way, serve as the foundation of a sustainable design science – is listed under the heading "Emerging Precepts of Biological Design." While the Todd's expand upon their scientific base by including discussions about such theoretical topics as "sacred ecology" and "redesigning communities," the book as a whole is very much a functional contribution to the design science.

Another important book in this genre, required in the library of every sustainable designer, is *Ecological Design* (1996/2007), the work of Sim Van der Ryn and Stuart Cowan. This book also delineates a set of guiding principles, yet composed in such a way that they constitute, *en masse*, a reproducible design process. In the Preface to their reprint, the author's claim: "We are still trapped in worn-out mechanical metaphors. It is time to stop designing in the image of the machine and start designing in a way that honors the complexity and diversity of life itself" (p. x). Here, then, is another instance where sustainable design is framed within an evolution to ecological consciousness.

Two Australians, Bill Mollison and David Holmgren, started a sub-cultural revolution with the formulation of an ecological design system called 'permaculture.' Mollison's *Permaculture:*

A Designer's Manual (1988/2004) is a veritable encyclopedia of very practical information for designing sustainable human systems that mimic "the diversity, stability, and resilience of natural ecosystems" (from the back cover). This is the book you'd want to have with you if stranded on the proverbial 'desert isle!' The information often comes in the form of specific botanical species that can be utilized for specific functions in specific micro-climates. Revealingly, however, beauty is never offered as a possible function.

Holmgren, the junior partner, went on to self-publish a later volume, containing the lessons learned over more than 20 years of permaculture practice and teaching, with the titillating title *Permaculture: Principles & Pathways Beyond Sustainability* (2002). To my knowledge, this was the first published usage of the term "beyond sustainability." So what does Holmgren have in mind by using this term? "*In articulating Permaculture as the Principles and Pathways Beyond Sustainability, I am suggesting that we need to get over our naïve and simplistic notions of sustainability as a likely reality for ourselves or even our grandchildren and instead accept that our task is* [to] *use our familiarity with continuous change to adapt to energy descent*" (p. xxx, emphasis in original). For Holmgren, then, "beyond sustainability" means giving up the misplaced hope that our current system could ever be "sustained" in anything like its present form.

David Orr has been an influential proponent of ecocentric thinking ever since the introduction of his 1992 book *Ecological Literacy*. In 2002, Orr made the *design* connection with ecological literacy explicit with the publication of *The Nature of Design*. "This book is not an argument to return to some mythic condition of ecological innocence. No such place ever existed. It begins, however, with an acknowledgement that we have important things to relearn about the arts of longevity – what is now called "sustainability" – from earlier cultures and societies" (p. 11). Orr then proceeds, significantly, by noting the transformative potential of design: "The issue is whether the emerging field of ecological design will evolve as a set of design skills applied as patchwork solutions on a larger pattern of disorder or whether design will eventually help to transform the larger culture that is badly in need of a reformation" (pp. 11-2).

One more author should be represented in this survey: Victor Papanek (1984/2009, 1995) has had an impressive career as a professional designer and educator. While his work is typically situated in product and industrial design, he nevertheless grounds his principles in ecology: "Design must be the bridge between human needs, culture and ecology" (1995, p. 29). Of particular interest to the present paper, his book *The Green Imperative* includes a chapter entitled "Toward the Spiritual in Design." In this chapter, we find the first treatment of "The Function of Beauty" (1995, pp. 48-53). Papanek encapsulates his position about beauty – and in doing so prepares us for the next phase of this paper – by pondering: "To the statement, 'If it functions well, it will be beautiful', we now add the questions: 'If it functions well, doing what? It will be beautiful in what sense? Function and Beauty in what context?" (p. 50).

The above author-practitioners were the illustrious heroes of a generation passionate to learn the secrets of sustainable design. They effectively took the emerging ecological consciousness and

formulated it into precepts of a new design science. These were the pioneers, the innovators "living on the edge of the future" and thus transcending established norms. Ironically (or perhaps evolutionarily), with each passing year the principles these pioneers propounded move ever closer to the center: mainstream education and professional practice increasingly incorporate these principles into their curricula and lexica. Indeed, it could be said that all the knowledge we need to implement 'sustainability' is already available; all the prototypes and test plots have already been tried. Even though the principles are being accepted by a wider audience (in theory), there seems to be an incredible inertia stalling immediate and widespread implementation. At the same time, there's the almost superhuman patience needed to wait for the global evolution from an anthropocentric to an ecocentric worldview.

Contrary to Holmgren's understanding of the term, I would assert that sustainability is inevitable: either the human project achieves steady-state material maintenance or it expires. The question may be more of how much downsizing, restructuring, realigning, energy descending – and, unfortunately, the associated suffering that may result from resistance to these trends – will be necessary before sustainability is finally realized. With sustainable design principles already firmly established, it may be time to begin envisioning *beyond* sustainability – toward the loftier goal of fulfillment and self-realization of human potential.[1] Perhaps a new league of pioneers will be summoned to articulate the qualities of the orientation to this next transition? As a preliminary contribution, I wish to propose here that the ubiquitous implementation of beauty will be the attractor that pulls humanity toward this ultimate conclusion. Perhaps ol' Bucky was right? It really is *Utopia or Oblivion.*

With that in mind, beauty ought to be treated as a *design* challenge – a central design criterion – not an unaffordable luxury or optional accessory. For the purpose of working with an operational definition of design, the following rendition is forwarded:

> Broadly stated, design is the art of the possible. More technically speaking, design is the conscious, deliberate process by which elements, components, potentials, tendencies, etc. are intentionally arranged in the space-time continuum in order to achieve a desired result. In its fullest, most potent expression, *design is the imagining and bringing forth of new worlds*. We could say that design is a very human activity (Mare, 2008, p. 1, emphasis in original).

While the practice of design may be applied to any sphere of human activity, the present discussion will limit the scope of design to its application in the built environment. How, then, do we design for beauty? What is beauty anyway? What sort of noetic framework may be constituted to guide the transition beyond sustainability? Fun questions like these can now be entertained.

[1] "Fulfillment and self-realization of human potential" is not an anthropocentric position, like Classical Humanism. Human potential as used here already assumes the integration of an ecocentric worldview, a sense of partnership with Nature. Beyond ecocentricity lay opportunities for regeneration, co-creation, and identification with greater-than-terrestrial influences. Within this greater frame of reference, consciousness and its somatic interface remain a virtually unexplored frontier.

Functional Beauty

To begin this section, it will be important to make a distinction between 'functional' and 'utilitarian.' It was observed that sustainable design tends to emphasize a 'utilitarian' perspective. Webster's defines utilitarian as, "Of or pertaining to utility; esp. placing utility above beauty, the amenities of life, etc." Utility is practical, useful, an unadorned and no-frills fitness for a specific purpose. From a utilitarian perspective, considering beauty may seem irrelevant, at best, or a waste of time, energy, and resources at worst. Perhaps sustainable design has tended to emphasize utility because the people who understand the need for sustainability often feel a sense of urgency: sustainable designers often work under the constraints of limited resources while concurrently wanting to effect as big a change as possible in the shortest amount of time. I personally have seen permaculture and ecovillage projects in which beauty appears not to have been a design criterion. Alas, sustainability is often perceived by the general public as being a bland and drab, unnecessarily frugal, approach to life.

Functional, by contrast, leaves a little more room for maneuvering. Referring back to Webster's for the sake of clarity, a function is "The specific, natural, or proper action or activity of something" – thus, functional implies satisfying or evoking intrinsic purpose, whatever that purpose may be. Appropriating this idea to the built environment, we could say that Chartres cathedral, for example, has the function of evoking awe and wonder as intimations of the divine. In this case, beauty definitely has a functional role. What about a public plaza? It has the function of serving as a meeting or gathering place, encouraging casual sociability with an optional anonymity.[2] In this case, the embellishment of beauty has the functional role of contributing to an agreeable and cheerful atmosphere, which will in turn influence the quality of social interactions. We would not want to line the plaza with junk cars – no, ornamental lamps, strategically placed statuary, a few decorative places to sit around the perimeter, maybe even a tiled geometric surface like that found in the Placa de Catalunya in Barcelona would be in order. Adding features like these will contribute to functional beauty: the function is to instill a desired state of emotion.[3]

Papanek's querying in the Introduction to this paper, concerning the relationship between function and beauty, was in reference to the Bauhaus motto, "If it functions well, it will be beautiful – and therefore have spiritual value" (1995, p. 49). But can it be that straightforward? Papanek's conclusion is a definite "no." He claims that the "cool elegance" propounded by this influential design school may be regarded from the vantage point of the present day as "cold

[2] For a thorough discussion of public gathering places, see Childs (2004) *Squares.* For standard dimensions of major plazas, see Papanek (1995), pp. 110-111. For the definitive treatment of more intimate public spaces, see Alexander, et al. (1977), Pattern 61: Small Public Squares, pp. 310-314

[3] The following may help to further illuminate the essence of 'function:' "The functions of natural or living things are best characterized as their roles in ecological or biological systems" (Davies, 2006, p. 229, Note 10). This implies that function also refers to systemic relationship. The function of features like a cathedral or plaza can best be understood by noting their roles in progressively supra-urban systems.

sterility," embodying a style that is "elitist and seen as alienating by many" (ibid). The Bauhaus, of course, originated in Germany in the 1920s as a brewery of "Modernism." Mare (2009, pp. 5-11) observes that Modernism corresponded with the rise of "Fordist mass production" and the "behavioral technology" of Behaviorist psychology. Morgan (1986, pp. 29-38) situates the diffusion of Frederick Taylor's "organization as machine" theory of management within this same period. Hitchcock (1958, p. 367) references the influential Modernist Le Corbusier and his famous dictum: "The city is a machine for living." In all these cases, we see that the vogue of designing that championed a "Modernism" appeared within a general and widespread mechanization – and thus dehumanization – of society and mind.[4]

A particularly colorful critique of Modernist ideology comes from the acclaimed architect for the Prince of Wales, Leon Krier:

> Modernism may well denounce all forms of historicism, but when it conceives of churches that resemble warehouses, palaces of culture that imitate oil refineries, and houses that look like ships, it practices historicism's own confusion of categories, changing the image but not the tendency. Once it had exhausted the vocabulary and repertory of traditional architecture, the ideology began colonizing other fields with the same voracity, usurping the formal registers of industrial and naval architecture, and of machines and tools (1998, p. 63).

Krier has created a fabulous typology of vernacular and classical forms that may be applied to the (re)design and organization of the built environment. I wish to return to his "architectural tuning of settlements" later. For now, it's enough to note that Krier's livid interpretation of Modernism assuredly would apply some qualification to the Bauhaus motto, "If it functions well, it will be beautiful – and therefore have spiritual value." Function is necessarily a consequence of purpose. The mechanization and commoditization of the world that corresponded with the infusion of Modernism confused this relationship. Churches have their characteristic purpose and warehouses have theirs – and neither is intended to be a machine. Each can apply a functional beauty so long as it remains appropriate to that given realm.

Here it may be appropriate to introduce the realm of 'art.' What is the function of art? Could an object displaying undeniable functional beauty also be considered art? Stephen Davies (2006) explores these kinds of questions in his essay "Aesthetic Judgements, Artworks and Functional Beauty:"

[4] Bentz and Shapiro (1998, p. 20-3) situate "modernism," the aesthetic ideology that came to the fore in the early 20th century, within the larger project of "modernity:" "A common feature of most conceptions of modernity is what the sociologist Max Weber called "rationalization" – that is, the expansion of more and more sectors of behavior, thought, and social life of "formally" or "technically" rational conduct, which is based on efficiency, calculation, predictability, procedures or algorithms, and the adaptation of means to ends (Habermas, 1984; Weber, 1968; Weber 1992). I think it would be safe to venture that this applied "rationality" lies at the very core of the condition of un-sustainability. As a case in point, couldn't it be said that the placement of the Fukushima nuclear power facility was a decision based on "rational" judgment? That is, the decision was rationalized based on criteria of "efficiency, calculation, predictability, procedures or algorithms, and the adaptation of means to ends."

> Because the idea of art for art's sake was not prominent prior to the nineteenth century in the West, and because the art (so-called) of most small-scale pre-industrial societies is entirely functional, some authors deal with this tension by arguing that only fine art, as it developed in post-Enlightenment Europe, truly qualifies as art. Art occurs globally now only because Western culture has colonized the world. Moreover, the claims of mass and popular Western art have also been challenged. While these are recent products of the West, they lack the seriousness and 'uselessness' that came to be central to the modern concept (p. 224).

To substantiate his argument, Davies finds it necessary to make a distinction between "aesthetic judgement" – in the Kantian sense of the "free beauty" intrinsic to an object irrespective of it having functional value – and "artistic properties." "Artistic" here is meant to have the same connotation as the etymologically similar 'artifact.' With that in mind, it's easy to see why Davies would assert: "When exceptional craftworks and pieces with an explicit religious, ethical or other extrinsic purpose seem to qualify as artworks, they do so usually because of the success with which they *integrate* their practical and aesthetic functions" (p. 236, emphasis in original). Thus, "A functionally beautiful [artifact's] aesthetically valuable properties must enhance its fulfilling its primary function…" (p. 237). And what is the function of the artifact that we call 'the built environment?'[5]

Storck (2010) continues in this vein by referencing a statement made by Thomas Aquinas, to the effect that "even though a saw made of glass would be more beautiful than one made of iron, it would not fulfill its artistic end" (from Abstract). Contemplating this caricature, we could arrive at the seemingly paradoxical conclusion that "the pursuit of beauty here is *in opposition to* art" (p. 2, emphasis added); thus, Aquinas defined art as "*recta ratio factibilium*, the right conception of a thing to be made" (ibid). Storck's purpose is to functionally resituate and realign art, beauty, and the artist in society:

> However, we must deal with a difficulty in that usually the fine arts are no longer conceived as art in the sense of *recta ratio factibilium*, and thus their connection with the more humble arts of making pots or bottles or saws [or villages] is entirely forgotten or denied. For the fine arts are now commonly regarded as focusing on beauty directly and for its own sake, although as a matter of fact this pursuit of beauty has sometimes led to an entire loss of beauty; or rather, to its subordination to the taste or whim of the artist (pp. 2-3).

[5] It would be illustrative to understand how one particularly creative and influential culture used the word 'art:' "Our word *art* does not adequately reproduce the sense of the Greek word [techne]. Like *art*, *techne* emphasizes practical use. But *art* for us implies individual creation subject to no rule, whereas *techne* has the sense of well-established knowledge and ability, which we associate with *technique* or *profession*. The Greeks used *techne* far more widely than we use *art*: they used it for any profession based on special knowledge – not only painting and sculpture, architecture and music, but just as much, or even more, medicine, strategy, or helmsmanship. The word thus connotes the practice of a vocation or profession based not merely on routine experience but on general rules and fixed knowledge…" (Jaeger, 1943/1986, pp. 129-30, emphases in original).

Storck then cites a colleague's perspicacious position on this matter:

> The idea that the distinction between art and fine art is that art is skill applied to the making of useful things and fine art is skill applied to the making of things of beauty, is clearly unreasonable – because there is no reason why useful things should not be beautiful, and there is no reason to suppose that beautiful things have no use. Are tables and chairs and houses and pottery necessarily ugly? Are portraits and statues and church paintings and wall decorations necessarily useless (p. 4, citing Gill, 1940, pp. 93-4)?

Bringing all this right back to the built environment, we might rightfully ask: Why shouldn't something as useful as the built environment also be beautiful? Why is it that the built environment is not considered a work of art? Why is it that settlement design is not presented as an art form? Why are professional urban planners trained to be engineers and not artists? The built environment – that assembly of streets, buildings, social and economic spaces, parks and plazas, nodes and districts, etc. – is the living context in which we conduct our lives. We could say that the function of the built environment is to provide a stage upon which to orchestrate the symphonies of our lives. What could be more important than designing and embellishing this stage with functional beauty?[6]

There was a time when the citizenry took great care to make their surroundings, their living milieu, beautiful. This would have been a slower time, with a more gradual pace, a time before the machine dominated society and mind, when the built environment was conceived as an ensemble, a contextual whole, rather than as so many individual and piece-meal acts of "psychological self-exhibitionism" (Gill, 1944, p. 91, as cited in Storck, 2010, p. 6). Norberg-Schulz is a contextual-thinking architect who bemoans this loss of place. In his *Towards a Phenomenology of Architecture* (1984), he explains:

> After the second world war most places have been subjected to profound changes. The qualities which traditionally distinguished human settlements have been corrupted or have got irreparably lost. Reconstructed or new towns also look very different from the places of the past […] The *character* of the present day environment is usually distinguished by monotony […] Lack of character implies poverty of stimuli. The modern environment in fact offers very little of the surprises and discoveries which make the experience of old towns so fascinating […] In general, the symptoms indicate a *loss of place* (pp. 189-90, emphases in original).

I would add that they also indicate a loss of concern for beauty. Norberg-Schulz goes on to conjecture the human consequences of such a situation: "From psychological literature we know that a general poverty of stimuli may cause passivity and reduced intellectual capacity,[7] and we

[6] I am reminded here of Papanek's tale about when he lived among the Inuit, how he was "struck by the time devoted to carving ornament on tools" (1995, p. 51). It is just this sort of attention to functional beauty that I have in mind, this ennobling of our everyday lifeworld through beauty.

[7] The reference cited is Rapoport, A. & R.E. Kantnor (1967) Complexity and ambiguity in environmental design. *American Institute of Planners Journal,* July

may also infer that human identity in general depends on growing up in a "characteristic" environment. The environmental crisis therefore implies a *human* crisis" (p. 191, emphasis in original). Sustainable design may help to achieve steady-state material maintenance but if we want also to improve the human condition we ought to begin thinking in terms of beyond sustainability.

It would seem appropriate to close this section on functional beauty by recalling a familiar statement – I can't remember where I heard it for the first time – attributed to the Balinese, something to the effect: "We don't have a word for 'art;' we do everything as beautifully as we can." Now *that* is functional beauty.

Evolutionary Beauty

There is a branch of the literature dealing with what is called an "evolutionary perspective" on beauty, or sometimes "Darwinian aesthetics." The theories in this literature proceed from the hypothesis that beauty has played a role in the evolution of the species, and so it must represent a primordial adaptation response. With knowledge gained from this evolutionary perspective, we may approach the development of design criteria beyond sustainability increasingly well-informed.

At the most fundamental level, the evolutionary perspective looks at the biological apprehension of beauty, especially as this influences mate selection. Karl Grammer has conducted extensive research into this theme; in 2003, he co-published an article that could be considered the definitive statement. The following passage is taken from the Abstract:

> Human beauty standards reflect our evolutionary distant and recent past and emphasize the role of health assessment in mate choice as reflected by analyses of the attractiveness of visual characters of the face and body, but also of vocal and olfactory signals. Although beauty standards may vary between cultures and between times, we show in this review that the underlying selection pressures, which shaped the standards, are the same. Moreover we show that it is not the content of the standards that show evidence of convergence – it is the rules or how we construct beauty ideals that have universalities across cultures. These findings have implications for medical, social and biological sciences.

I would add (although Grammer, et al. could not have anticipated it) that these findings also have implications for the design science envisioned by Fuller; for, "beauty standards" ingrained at the level of biological reproduction must supersede and undergird any later developments of beauty standards that would finally culminate in the "judgment of taste" that is the concern of the philosophers of aesthetics. What's more, these standards are said to be *universal* across cultures.

"The human obsession with beauty is not different from similar obsessions in other organisms. Thus it is quite likely that human mate selection criteria, which have evolved through human evolutionary history, are responsible for the shaping of our perception of attractiveness and beauty […] In this standard, beauty and sexual attractiveness seem to be the same…(Grammer, et al., 2003, p. 388). Hmm, what does this imply for the contemplation of,

say, a Matisse? According to Grammer, et al. (p. 393), it all comes down to a process that Muller (1993) has termed "neuro-aesthetics:" there is higher nervous system excitation upon the recognition of a gestalt that is registered as beautiful. "Considerable evidence has accumulated in recent years supporting the hypothesis that both facial and bodily physical attractiveness are health certifications and thus represent honest signals of phenotypic and genetic quality" (Grammer, et al., 2003, p. 399). Evolutionarily speaking, and in this case gender-specifically speaking, "particular features of faces of women and particular proportions of waists and hips are only considered to be beautiful because our ancestors with such preferences left more healthy offspring than the individuals in the population without the preferences" (ibid, p. 387). This all sounds fair enough; though one has to wonder whether similar proportions adapted to buildings or streetscapes, planter-boxes or porticoes, also would result in higher excitation "neuro-aesthetic" responses?

It is worth noting a couple of conclusions from this paper, as they may point to design considerations: 1) The basic features of human beauty in faces and bodies are symmetry (evenly proportioned along a central axis; symmetrical stimuli exploit the sensory system of the receiver), averageness (because traits at the extreme of a population may carry disadvantageous genes), and sex-hormone markers (such as small lower faces in women and large lower faces in men). These features reflect "sex-prototypical design of traits," "developmental stability," and "immuno-handicaps" (such as suppression of parasites) and are linked directly to optimal reproduction. The basic processes are biological universals for humans, animals and even plants; and 2) These researchers do not assume innate beauty "detectors;" rather they propose that the brain has an innate tendency and basic rules on how to create "beauty templates," which are then fulfilled during ontogeny (adapted from pp. 402-3). This vital image of "beauty templates" in the brain will be revisited when looking at the more specific neural correlates of beauty.

De Sousa (2004) prefers to look at the role that *art* has played in the evolutionary development of the species. Is art an adaptation? To support his investigation, De Sousa (p. 111) references the ethologist Ellen Dissanayake (1999, pp. 33, 29), who claims: "art could have arisen and persisted, not as an epiphenomenon or other behavior but as a positive and primary motivation in its own right […] engaging with the arts – like eating, sleeping, sex, socializing, and parenting – is a fundamental and essential part of human nature."[8] De Sousa also references Frederick Turner (1999), who "defends the idea that the sense of beauty is an adaptation. He gives this idea two interpretations. One is the plausible one that art has served our ancestors in navigating the world in practice. The more ambitious thesis is that art actually reveals to us the *deep structure of the laws of the universe*" (p. 112, emphasis added).

Based on his study of these and other sources, De Sousa (p. 117) is able to conclude: "We have seen four kinds of biological functions attributed to art. We can think of these as delineating four types of beauty." These four types are: 1) Beauty as a solution to a coordination problem; 2)

[8] Davies (2006) also references Dissanayake: "In small-scale pre-industrial societies, most of the art that is produced is [functional]. According to the ethologist Ellen Dissanayake, art is a brand of 'making special' that has adaptive value in that it enhances the reproductive success of individuals by forging and solidifying co-operation, group cohesiveness and a sense of social belonging" (p. 240, referencing Dissanayake, 1988, pp. 74-106).

Beauty as the phenomenal correlate of non-standard mechanisms of selection; 3) Beauty as a reflection of the innate structure of the universe; and 4) Beauty as the pleasure taken in the exercise of the cognitive mechanisms of the brain (adapted from p. 117). "On this last view, the function of beauty is similar to that of art's other familiar kin, *play*; but it is play located in the very heart of the brain's cognitive modules" (ibid, emphasis in original). Such deep placement surely must indicate a primordial function for beauty. The task of the evolutionary-oriented designer, attempting to optimize human potential, must be to learn how to make this function visible, to become representative somehow in the built environment. Given the nature of this important project, I still want to know why settlement design cannot be an *art* form?

Yannick Joye (2007), from the Free University of Brussels, contributes a fascinating article that relates the evolutionary perspective directly to the design of the built environment. "This article affirms the importance of natural form as a perennial source of inspiration for architecture. In fact, the main conclusion of this study is that nature-based forms and organizations in architecture are valuable for human emotional and cognitive functioning" (p. 305). Joye (p. 306) positions the "psychoevolutionary framework" of Roger Ulrich (1983) as the backbone of his study:

> In this model […] affective responses toward environmental settings are not mediated by cognition but stem from a rapid, automatic, and unconscious process by which environments are immediately liked or disliked. These fast affective reactions are claimed to be rooted in human evolutionary history and are essentially adaptive: They motivated the organism to quickly undertake actions that contributed to its well-being and survival.[9]

As an example of this phenomenon, Joye (p. 308) cites studies which seem to confirm "The Savanna Hypothesis." Apparently, research subjects had an aesthetic preference for those environmental characteristics that mimicked the primordial homeland of the genus *Homo*: "This type of biome can be broadly described as low to intermediately complex settings, having a relatively even and grassy ground surface dotted with scattered trees or tree groups. Savannas contain a high degree of biomass and meat, and these are relatively easily accessible for terrestrial beings (as opposed to, e.g., tropical forests). Furthermore, the openness of savannas facilitates detecting predators and game and is conducive of movement and a nomadic lifestyle."[10] Other studies are cited which reveal that exposure to natural scenes in general leads to stress reduction. The conclusion reached is "the general picture emerging from the previous

[9] De Sousa (2004, p. 116) would agree that the affective processes are "rapid, automatic, and unconscious." Referencing the work of Ramachandran and Hirstein (1999), he concludes: "Cognitive mechanisms of chunking, "binding," and exaggeration, as well as others typically exercised in recognizing objects, generate limbic activation felt as emotional response. This is responsible for the impact that they can have even in the absence of emotionally relevant representations. And the "mystery" of art is surely due in part to the fact that these mechanisms work without our having the slightest consciousness of their existence, let alone of the manner of their functioning."

[10] I noticed a particularly vivid application of the Savanna Hypothesis while visiting The Farm, an ecovillage in Tennessee. The residents there tended to clear large open areas and then situate their dwellings at the 'edge' where forest meets plain.

concise review is that humans have a (partly) hardwired emotional affiliation with certain classes of natural objects" (p. 309).

Given his "biophilic" (life loving) disposition, it is natural that Joye regrets the loss of Nature in the design curriculum and the design setting:

> The reason is that natural form can be considered as a creative or compositional grammar, which can be used for creating artwork, or, as Stephen Kellert put it, "The aesthetics of nature can function as a kind of monumental design model" (Kellert, 1997, p. 36). The loss of this monumental design model has its architectural counterpart in modern urban settings, which are increasingly governed by Euclidean geometry and stripped of ornament, patterning, detailing, and color (Salingaros, 2004). Architectural references to nature can help put an end to this uniformity. By encouraging architects to integrate natural forms and patterns in their work, they are motivated to study nature's shapes and compositional rules, and this can enrich their creative curriculum (p. 310).

The absence of natural forms and patterns, with its resultant dull uniformity, is purported to have "a number of psychological and physiological costs," since "there seems to be a discrepancy between the habitats humans have evolved in and modern urban settings" (p. 310). This brings us right back to the ongoing critique of Modernism: "Modernist architecture mainly consists of simple volumetric forms and thus deprives the senses in their constant search for meaningful information" (p. 311). This would imply that moving through a modern urban setting is a bit like a sense-deprivation experience (except for the jarring noises!), a sort of 'dumbing down' of the nervous system's innate capability for detecting novelty, patterning, and geometric meaning. This would seem to be the antithesis of 'optimizing human potential.'

Once again, the purpose of Joye's article is to make a case for reinstituting natural forms and patterns – including elements of ancestral habitats – into the design of the built environment. The article concludes by demonstrating specific applications of a biophilic orientation to architecture. The use of the fractal geometry of Nature is particularly well-discussed, based partly on a self-similarity justification: "It should be noted that sometimes the aesthetic appeal of fractal-like patterns is also explained by the fact that the nervous system is governed by fractal-like processes" (p. 319). Here we see that not only are natural forms and patterns mimicked, but the very organizational network that is doing the designing (the human brain) is replicated and made manifest in the external form. If we can accept the built environment as a work of art, then we might conclude: ""[Fractal] artwork externalizes and maps the internal brain-work…Conversely, the interaction of the viewer with the art form may be taken as an act of self-recognition"" (Joye, p. 320, citing Goldberger, 1996, p. 102).

I was very excited to discover this landmark article by Yannick Joye; the ideas developed have some very profound and meaningful design implications. I will keep this article accessible for future referral and have already begun pursuing some of the wealth of references cited. Still, amidst this acclaim, Joye, like so many others, keeps the discussion of architecture limited to the scale of individual buildings. My interest is adapting these ideas to *settlement* scale. How, for

example, would the fractal geometry of Nature be applied to the design of whole neighborhoods, villages, and urban agglomerations?

The evolutionary perspective of the role of beauty in human adaptation provides evidence justifying the inclusion of natural forms and patterns as a way to influence sustainable behavior. The presence of natural beauty apparently excites neural configurations devoted to self-preservation and the preservation of the species. Bourassa (1990, p. 797)) cites experiments which have revealed these configurations to be constitutive of the "paleomammalian, or limbic, brain," that older region of the brain which "acts upon information in terms of feelings, particularly emotional feelings that guide behavior." Designing for beauty, then, using natural templates, could be considered a strategy for pleasurably stimulating the limbic system into generating sustainable emotions. Bourassa, however, takes it a bit further by suggesting that "instinctual and emotional responses to landscape *could* occur separately from rational responses. In other words, there could be separate innate and learned responses to landscape" (p. 798, emphasis in original).[11] This is the crux of Bourassa's research, to suggest that ""biological" responses to landscape – based on innate patterns of emotional behavior – could possibly occur quite separately from "cultural" responses based on learned cognitive patterns of behavior" (p. 802). We are left here, then, with the possibility that, yes, certainly, designing with natural forms and patterns will activate the limbic system into promoting sustainable behaviors; yet, *beyond* sustainability – optimizing human potential – may require accessing a quality of beauty that could stimulate higher structures of the brain, those mental regions devoted to "cognitive" and "cultural" constructs. This would be the realm of the cerebral neocortex, that reasoning region of the brain which is, unfortunately it would seem, too often prone to abstractions like simple volumetric forms. Is there a design synthesis that can account for the beneficial stimulation of both of these evolutionarily distinct regions of the brain – the limbic system *and* the cerebral neocortex?

Since Bourassa prompted the question, it is fitting that he also provides a clue to its resolution. Here is the summation of his "tripartite" conceptualization of aesthetic response, adapted from Bachelard (1969):

> The idea that human mental structure can serve as a basis for aesthetic analysis has considerable intuitive appeal; it is obvious that aesthetic experience must be mediated by the mind and, therefore, may be a reflection of the structure of the mind. It has been observed that Jung's conception of mind provides a basis for integrating biological and cultural bases for behavior (Bourassa, 1988). In particular, Jung's division of the mind into three levels – consciousness, the personal unconscious, and the collective unconscious – provides a structure that allows for both biological and cultural influences on behavior. The archetypes, which are contained in the collective unconscious, are "patterns" of instinctual or biologically based behavior (Jung, 1928, 1959). On the other hand, consciousness and

[11] In his notes, Bourassa is clear to make the important distinction between 'environmental aesthetics' and the more preferred term 'landscape aesthetics:' "*Landscape* is a better word than *environment* in the context of aesthetics because the former implies perception, whereas the latter does not" (p. 807, emphasis in original).

> the personal unconscious provide a locus for culturally based influences on behavior (pp. 791-2).

This is a lot to think about. For now, I merely wish to note that "archetypes" also could be described, adapting the terminology of De Sousa, as "a reflection of the innate structure of the universe." From here, it might be a good idea to take a brief foray into the notion of "cultural beauty" as this may pertain to the design of the built environment.

Cultural Beauty

In the *Symposium* (1986), Plato portrays the alluring attraction to beauty as an innate human desire to reach for immortality. The pursuit of beauty can be considered an ascent that transverses three characteristic phases: 1) the purely biological attraction to reproduce through the physical beauty of another, resulting in progeny; 2) the more values-based attraction to reproduce through the perceived merits of another, resulting in poetry, laws, artworks, etc.; and 3) the philosophically-inspired attraction to reproduce through the divine qualities of the Ideal Forms, resulting in the embodiment of virtue – perennial truth and goodness. This consummation of beauty results in living the life of the fully realized sage and thus achieving immortality through a legendary exemplification of human potential. Advancing to this later stage, the culmination of the pursuit of beauty, does not deny or negate the realities of the preceding stages; rather, they are understood as already self-contained constituents to the ascendancy.

Aristotle continued the work of his mentor (while not necessarily agreeing on all its presuppositions) by establishing a corpus of philosophical norms, a legacy to the cognitive awakening that was characteristic of that era. Milliken (2006, p. 319) makes the connection between Aristotle's articulation of a set of ethics and their grounding in aesthetics: "Aristotle presents us with an ethics of aesthetics in contrast to the more standard ethics of cognition: A virtuous agent identifies the right actions by their aesthetic qualities." After claiming that "the virtuous person acts for the sake of the noble" (p. 321), Milliken helps to resolve the question of cognition in the perception of beauty:

> The virtuous agent steps back and sees, not the embodiment of a principle of reason, but an instance of aesthetic perfection. [She] is moved not by the reasonableness of the act, but by its beauty. The noble is fundamentally an aesthetic concept. By this I mean it is a matter of perception and not one of calculation (p. 327).

This would seem to suggest that the cerebral neocortex, if guided by higher order values such as the desire to achieve a noble presence, would be disinclined to rationalize away beauty but instead would be able to perceive beauty even in the conduct of virtuous behavior.

Milliken echoes some of our recent findings by explaining the semantics of the word Aristotle used for 'beauty,' the Greek *kalon*: "We might say *kalon*, in addition to meaning "beautiful," also means "functioning excellently." Alternatively, we could say things that are functioning excellently are described as *kalon* because functioning excellently *is* beautiful" (p.

327). Human beings, when acting as virtuous moral agents, also have the potential to function excellently: "We are attracted to beauty not just in things but also in people, and here I do not mean primarily external beauty" (p. 335) – "the force of the attraction of morality comes from our desire to *be* beautiful. Morally right actions contribute to an inner beauty that holds a very strong attraction for us indeed" (p. 330). "The form all *kalon* actions share, then, is not something grasped with the mind, but, so to speak, with the heart. The virtuous agent acts for the sake of the beautiful" (ibid).

Based on the explications of Plato, Aristotle, and Milliken, we could interpret that the Greeks embodied a *culture of beauty*. The highest ideals of the Greek mind sought beauty as an inherent expression of life, the exemplar to be attained, the goal toward which to strive. Positioning this attitude in evolutionary progression, Mumford (1961, p. 131) observes: "The transposition of the village into the polis, the place where people come together, not just by birth and habit, but consciously, in pursuit of a better life, takes place before our eyes in Greece." Mumford answers a previous question by stating that the function of the polis was nothing less than "the enlargement in human consciousness of the drama of life itself" (p. 178). In support of this function, Greek architects and planners "deliberately worked to achieve magnificent esthetic effects, not just in single buildings, but in the closer inter-relation of buildings both with each other and with the site" (p. 198). This last statement, of course, would refer to public works; for the majority of people lived in what we would consider ramshackle abodes, with poor sanitary conditions and amenities. Thus, this culture of beauty chose to invest resources in splendid civic scenery that would benefit and encourage the citizenry as a whole, and thus serve as a stage upon which to conduct the drama of the "enlargement in human consciousness."

A look into another society will help to expand this notion of "cultural beauty." Wenzel (2006) seeks to understand the nature of beauty as used by Confucius. Noting that the Chinese word for beauty is *mei*, Wenzel (p. 97) is able to determine: "For Confucius, it is primarily acts, attitudes, manners, and behaviors between human beings in society that are called *mei*." As examples, a couple of passages from the *Analects* are cited (p. 99):

> 1.12. In the usages of ritual (*li*) it is harmony (*he*) that is prized; the Way (*dao*) of the Former Kings from this got its beauty (*mei*). Both small matters and great depend upon it.
>
> 4.1. It is goodness (*ren*) that gives to a neighborhood its beauty (*mei*).

"[These two passages] suggest that *mei* has its grounds, or roots, in *li* and *ren*" (ibid) – ritual and goodness. Such an understanding of beauty could very well be not only the foundation for a sustainable culture but one that was concerned with advancing human potential.

Elaine Scarry (1999) composed a wonderful little book in which she proposed that beauty is allied with truth and justice. Scarry's book is very much a critique of modern culture, and especially academic culture, where she claims that beauty has been banished from the humanities. Ostensibly, according to its critics, the primary reason that beauty has been banished is because it contributes to "injustice." The typical argument goes, "beauty, by preoccupying our

attention, distracts attention from wrong social arrangements. It makes us inattentive, and therefore eventually indifferent, to the project of bringing about arrangements that are just" (Scarry, 1999, p. 58). Yet Scarry, a well-positioned academic, carefully and intelligently devotes her whole book to refuting this claim, arguing instead that beauty *contributes* to justice, as in this insightful passage:

> Beauty may be either natural or artifactual; justice is always artifactual and is therefore assisted by any perceptual event that so effortlessly incites in us the wish to create. Because beauty repeatedly brings us face-to-face with our own powers to create, we know where and how to locate those powers when a situation of injustice calls on us to create without itself guiding us, through pleasure, to our destination. The two distinguishable forms of creating beauty – perpetuating beauty that already exists; originating beauty that does not yet exist – have equivalents within the realm of justice…(p. 115).

"The beautiful, almost without any effort of our own, acquaints us with the mental event of conviction, and so pleasurable a mental state is this that ever afterwards one is willing to labor, struggle, wrestle with the world to locate enduring sources of conviction – to locate what is true" (p. 31) – and, we might assume, to locate also what is just.

Diessner, Davis, and Toney (2009) conducted a study to test Scarry's hypothesis. They subtitled their report "Testing Scarry and Elaborating Danto." Arthur Danto (2003) posited that "20th century artists avoided producing beautiful works because of an offended sense of justice" (Diessner, Davis, & Toney, p. 249). "The artists reasoned (or felt or intuited) that purposefully producing works of beauty was to cater to a bourgeois class that was destroying our world both socially and materially, and to offer beauty to the public was placating forces of evil. Producing works that shocked and confused was a form of justice-activism among artists" (ibid, p. 255). Since Danto situates the origins of this unfortunate aesthetic attitude at the beginning of the 20th century, it would appear representative of the general cultural malaise that corresponded with the rise of Modernism and the mechanization of society. As we have seen, it wasn't always that way:

> Beauty, since the dawn of Western civilization, has been one of the three ends of human being: truth, beauty, and the good (Plato, 1937/1892). Of course, in our post modern age, the words and concepts of *truth*, *beauty*, or *the good* have been kicked off the pedestal of divine Forms and deconstructed, whereas many intellectuals assume they remain in usage only among the naïve. Nonetheless, whether one believes truth, beauty and the good to be objective realities, or simply concepts used to gain power and oppress others, they continue to provoke and organize the thought of scholars, artists, and laypersons. In addition, close on the heels of these three big *ends* is the concept of justice. Justice is *the* prominent moral principle of Plato's *Republic* – Socrates argues justice is the central principle for structuring the order of a city-state, as well as organizing the individual human psyche (Diessner, Frost & Smith, 2004, as cited in Diessner, Davis & Toney, 2009, p. 250, emphases in original).

I would suggest that 20th century culture made a debilitating detour – and the deconstructionism of postmodernism is only making it worse. There seems to be an over-

emphasis on dissecting, rationalizing, sterile cognition divorced from the "heart" sense offered by Milliken above. All of this is directly related to the current crisis of sustainability and the urgent search for a way to design ourselves out of the mess. Once again, reinstating beauty as a ubiquitous design criterion – in all dimensions of culture – will be a decisive attractor pulling us back into harmony with Nature and with each other; the evidence is all there. Hagman (2002, p. 672) restates all this rather dramatically: "A civilisation that does not value beauty would be one that cannot hope and that cannot assert life over the inevitable and ubiquitous forces of entropy and death." Machines are prone to entropy, inevitable breakdown and disrepair; Life is the miracle of *neg*entropy, improbable conditions of order that reach for ever higher levels of organization and refinement. A renewed culture of Beauty would be a re-affirmation of Life.

The results of the study Diessner, Davis, and Toney (2009) conducted proved to be quite interesting. They discovered a significant correlation between beauty and *fairness*, and less so between beauty and justice. "The findings in our studies here – that engagement with beauty and fairness as a personality trait are significantly correlated – implies that when artists create works of beauty they may be enhancing the viewing public's development of the trait of fairness" (p. 255). Extrapolating, could we not conjecture that creating beautiful built environments also would contribute to enhancing citizens' traits of fairness, just by living in them? This brings to mind the 'structural coupling' theory developed by Maturana and Varela (1987), where "the organism both initiates and is shaped by the environment […] we must see the organism and environment as bound together in reciprocal specification and selection" (Varela, et al. 1991, p. 174). "As humans shape the systems in and through which they live, they are in turn shaped by their human systems" (Jantsch, 1975, p. 61). Therefore, create a beautiful built environment and you will promote beautiful human beings – human beings conscious of and concerned about truth, goodness, and fairness. It could be just that plain and simple.

I think it fitting to exit this section on cultural beauty with the thoughtful words of Roger Scruton (2009), a seasoned cultural connoisseur of beauty – albeit one who is committed to a "rational" philosophical aesthetics; nevertheless, he makes a heart-warming point:

> Our need for beauty is not something that we could lack and still be fulfilled as a people. It is a need arising from our metaphysical condition, as free individuals, seeking our place in a shared and public world. We can wander through this world, alienated, resentful, full of suspicion and distrust. Or we can find our home here, coming to rest in harmony with others and with ourselves. The experience of beauty guides us along this second path: it tells us that we *are* at home in the world, that the world is already ordered in our perceptions as a place fit for the lives of beings like us. But – and this is again one of the messages of the early modernists – beings like us become at home in the world only by acknowledging our 'fallen' condition, as Eliot acknowledged it in *The Waste Land*. Hence the experience of beauty also points us beyond this world, to a 'kingdom of ends' in which our immortal longings and our desire for perfection are finally answered. As Plato and Kant both saw, therefore, the feeling for beauty is proximate to the religious frame of mind, arising from a humble sense of living with imperfections, while aspiring towards the highest unity with the transcendental (pp. 174-5).

Archetypal Beauty

Bourassa (1990) above introduced the important distinction between purely biological and distinguishably cognitive apprehensions of beauty. He further introduced the organization of mind as developed in the psychology of Carl Jung as a possible framework upon which to understand this distinction. While I believe Bourassa is off to a good start here, I have to question his placement of the "archetypes of the collective unconscious" as strictly biological-instinctual influences. My reading of Jung is a little different. A comprehension of the role of "archetypes" in the project of designing beyond sustainability is important enough to warrant a more thorough investigation.

In a chapter entitled "Archetypes of the Collective Unconscious" in the voluminous *The Basic Writings of C.G. Jung* (1990), these fundamental concepts are introduced. After describing the appearance of the concept of "unconscious" with Freud as "limited to denoting the state of repressed or forgotten contents" of a personal nature, Jung is compelled to offer a distinction:

> A more or less superficial layer of the unconscious is undoubtedly personal. I call it the *personal unconscious*. But this personal unconscious rests upon a deeper layer, which does not derive from personal experience and is not a personal acquisition but is inborn. This deeper layer I call the *collective unconscious*. I have chosen the term "collective" because this part of the unconscious is not individual but universal; in contrast to the personal psyche, it has contents and modes of behaviour that are more or less the same everywhere and in all individuals. It is, in other words, identical in all [humans] and thus constitutes a common psychic substrate of a suprapersonal nature which is present in every one of us (pp. 299-300).[12]

It is quite significant that Jung includes in this introduction of the collective unconscious qualifying terms like "universal" and "suprapersonal." He then states: "The contents of the personal unconscious are chiefly the *feeling-toned complexes*, as they are called; they constitute the personal and private side of psychic life. The contents of the collective unconscious, on the other hand, are known as *archetypes*" (p. 300).

> The term "archetype" occurs as early as Philo Judaeus, with reference to the *Imago Dei* (God-image) in man. It can also be found in Irenaeus, who says: "The creator of the world did not fashion these things directly from himself but copied them from archetypes outside himself." In the *Corpus Hermeticum*, God is called […] (archetypal light). The term occurs

[12] Walters (2000) claims that there is no such thing as the "unconscious."According to this view, derived from the teachings of Yogananda, consciousness extends everywhere; even the tiniest stone is vibrating with some measure of consciousness. The proper term for what Jung is describing, therefore, would be "subconscious," that which has yet to emerge in conscious awareness. Four Arrows (2010, p. 5), from a Native American perspective, echoes this theme: "According to indigenous cultures, all "People" are sacred, but these traditional cultures define "People" as including trees, birds, mammals, fish, plants, humans, etc. "Grandfathers," whether rocks or frogs or cardinal directions, all teach us how to live in balance." While I personally have ceased using the word "unconscious" based on these teachings, it would be too complicated to make this transition in the writing.

> several times in Dionysius the Areopagite, as for instance in *De caelesti hierarchia*, II, 4: "immaterial Archetypes," and in *De divinis nominibus*, I, 6: "Archetypal stone." The term "archetype" is not found in St. Augustine, but the idea of it is. Thus in *De diversis quaestionibus LXXXIII* he speaks of "*ideae principales*, 'which are themselves not formed…but are contained in the divine understanding.'" "Archetype" is an explanatory paraphrase of the Platonic *eidos.* For our purposes this term is apposite and helpful, because it tells us that so far as the collective unconscious contents are concerned we are dealing with archaic or – I would say – primordial types, that is, with universal images that have existed since the remotest times" (pp. 300-1).

Such powerful imagery. The first thing I notice about Jung's passage is the depth of his scholarship. The second thing I notice is how often the concept 'archetype' is used to convey intimations of the divine – even *trans*-divine, as in Ireneaus' conception that the creator God used archetypes "outside himself" to fashion the Creation. Clearly, the archetypes of the collective unconscious are not to be understood as simply ""patterns" of instinctual or biologically based behavior" as Bourassa postulated. Instinctual or biologically based behavior is governed by the paleomammalian limbic system, common to even dogs and cats; whereas the thinkers above are using the concept of archetype to probe the highest reaches of a cognating, self-reflexive intellect. If there is to be a distinction between biologically mediated (sustainable) aesthetics and cognitive or culturally mediated (beyond sustainability) aesthetics, then the archetypes are definitely contributing to the latter.

Along with the "universal" applications mentioned above, Jung (pp. 301-2) goes on to explain that archetypes also can be contained in the more culturally-specific formations of "esoteric teachings, fairytales, and myths" – where myths are "psychic phenomena that reveal the nature of the soul." And whereas Jung's references are all foundations of the Western tradition, we clearly see the usage of archetypes in such testaments as the *Bhagavad Gita* – and even the Taoists had a sect that formulated a complex hierarchy of deities, demigods, and levels of heaven. The idea of archetype does indeed appear to be a powerful and universal psychic need for beings who think like us. This must be what De Sousa was referring to when he said art has the potential to reveal "the innate structure of the universe." And this must be what Plato was referring to by the Ideal Forms, those exquisite perfected prototypes of which ideal Beauty is one, and after which all earthly manifestations can be only vitiated copies. If we can accept this archetypal level of Beauty, a Beauty that can inspire us to reach for empyrean heights, how then do we use this knowledge to design built environments that may facilitate the optimization of human potential?

Let's begin by stepping back a bit and looking at the larger picture, as it were: the origin of the Creation we will be working with. Here's a preferred version that's been passed down from a tradition in India:

> When Spirit first manifested itself as cosmic creation, it projected itself outward into a state most closely resembling pure consciousness – in the form of thoughts and ideas.
> Vibrationless in itself, it set part of its undifferentiated being into vibratory movement.

> Thus was manifested the ideational, or causal, universe: causal, because from the level of thought forms were projected the vibrations that made grosser levels of manifestation possible.
>
> Pure Consciousness, after creating the universe of ideational vibrations, worked through them to produce denser vibrations. Causative ideas became energy and light. Thus appeared the second stage of creation: the astral universe.
>
> Pure Consciousness, finally, filtering, or stepping down, its vibrations as if through a transformer, descended through the stages of ideation and energy to manifest such dense vibrations that they appeared solid. Astral energy became matter. And thus was manifested the third and last stage of creation: the material universe (Walters, 2000, pp. 138-9).

This cosmic creation story helps to place the ideal or archetypal Forms in greater perspective. These ultra-high vibrational Forms would be situated in the ideational or causal realm of existence. This is where we would find the idea 'Beauty' in all its splendor. Catching a glimpse of this higher vibrational Beauty will enliven, sharpen, and inform our perception when designing for beauty on the material plane. Plato says we can access this Beauty after extended contemplation; Walters prefers the word meditation – either way, a period of reflection is recommended before jumping into action. Walters (p. 138) also says, "Energy is the link between mind and body – between consciousness and material creation;" therefore, we ought to always keep in mind that, as designers of beauty, we are working with a very special kind of energy. This would seem to imply a need for refining our own energy first, before applying this energy to the manipulation of forms and patterns, processes and tendencies – which all have an energy of their own.

Next, we ought to adopt a proper attitude for this kind of work, the idea that we can influence human potential through the design of the built environment. George Santayana wrote a wonderful book back in 1896 that contains important insights in this direction. In his long section on "Form," Santayana instructs:

> Our percepts are thus habitually biased in the direction of practical interest, if practical interest does not indeed entirely govern their formation. In the same manner, our aesthetic ideals are biased in the direction of aesthetic interest. Not all parts of an object are equally congruous with our perceptive faculty; not all elements are noted with the same pleasure. Those, therefore, which are agreeable are chiefly dwelt upon by the lover of beauty, and his percept will give an average of things with a great emphasis laid on that part of them which is beautiful. The *ideal* will thus deviate from the average in the direction of the observer's pleasure […] For this reason the world is so much more beautiful to a poet or an artist than to an ordinary [person] (pp. 76-7, emphasis added).

We would do well to remember that not everyone is going to understand our urgency to create beauty; and even in this there will be comparative degrees of beauty, various deviations from the 'ideal.' "The pursuit of absolute or ideal beauty may [actually] distract us from the more urgent business of getting things right" (Scruton, 2009, pp. 12-3) – or getting things done at all! All perceptions of beauty are subjective: different people will have varying degrees of access to what

Jung termed “the feeling-toned complexes;” varying degrees of education also will have an influence on the perceiver of beauty.

Santayana approaches some of these concerns in a section entitled “Illusion of Infinite Perfection.” After stating, “we can only see beauty in so far as we introduce form” (p. 91), he asks many questions: “If we feel a certain disappointment in the monotonous limits of a definite form and its eternal, unsympathizing message, might we not feel much more the melancholy transiency of those glimpses of beauty which elude us in the indeterminate? Might not the torment and uncertainty of this contemplation, with the self-consciousness it probably involves, more easily tire us than the quiet companionship of a constant object? May we not prefer the unchangeable to the irrecoverable?”

> We may; and the preference is one which we should all more clearly feel, were it not for an illusion, proper to the romantic temperament, which lends a mysterious charm to things which are indefinite and indefinable. It is the suggestion of infinite perfection. In reality, perfection is a synonym of finitude. Neither in nature nor in the fancy can anything be perfect except by realizing a definite type, which excludes all variation, and contrasts sharply with every other possibility of being. There is no perfection apart from a form of apperception or type; and there are as many kinds of perfection as there are types or forms of apperception latent in the mind (p. 91).

Endeavoring to optimize human potential through the design of archetypal forms of beauty is not an ordinary project: the project inevitably will be framed within the larger movement of planetary evolution. Accordingly, it will be important to adopt a proper attitude – for there are bound to be many disappointments along the way. The designer of archetypal beauty may best be conceived as a co-creator – co-creating with a divine form of intelligence – so personal setbacks are not to be taken too much to heart. Even a small accomplishment will contribute in a big way toward the evolution of consciousness on the planet. Still, a commitment to an ongoing and ever-deepening education will ensure increasing degrees of competence – and continued opportunities for praxis. With such an extended preliminary, let’s now look at some of the design considerations.

First, at the cultural scale, there will be an assortment of indigenous and pre-existing “esoteric teachings, fairytales, and mythologies” relevant and unique to a given situation. These should be studied and applied wherever possible. The use of associated iconography and cynosure will serve as continual reminders to the subconscious of the greater-than-human dramas to which these cultural stories refer. Vernacular motifs and patterns are there for a reason; they probably represent the meaning contained in native flora, fauna, and/or landform relationships, and so should be respected as integral to the specific human-nature cultural symbiosis of the place. Introducing motifs or patterns from another cultural context could lend confusion to the subconscious. The existence of developing mythologies should be researched as these will be an indication of where the collective soul is growing. Any time any aspect of the existing lifeworld is afforded mythological significance, the subconscious will be touched deeply, resulting in a surge of human potential.

From a universal perspective, I'm thinking primarily of a field called "sacred geometry,' which has several branches. The literature in this field has become quite extensive – and still growing – so there will be room to address only a few points here. No worries; just a little bit of exposure to what this sublime field has to offer is enough to send the imagination reeling with possibilities for application to the design of the built environment. Let's begin by referencing Plato once again, for he seemed to have access to such penetrating insights into these matters.

> In the same way that Plato conceived the "Great Ordering One" (or "the One ordering with Art)[13] as arranging the Cosmos harmoniously according to the preexisting, eternal, paradigma, archetypes or ideas, so the Platonic – or rather, neo-Platonic – view of Art conceived the Artist as planning his work of Art according to a preexisting system of proportions, as a "symphonic" composition, ruled by a "dynamic symmetry" corresponding in space to musical eurhythmy in time. This technique of correlated proportions was in fact transposed from the Pythagorean conception of musical harmony: the intervals between notes being measured by the length of the strings of the lyra, not by the frequencies of the tones (but the result is the same, as length and numbers of vibrations are inversely proportional), so that the chords produce comparisons or combinations of ratios, that is, systems of proportions. In the same way Plato's Aesthetics, his conception of Beauty, evolved out of Harmony and Rhythm, the role of Numbers therein, and the final correlation between Beauty and Love, were also bodily taken from the Pythagorean doctrine, and then developed by Plato and his school (Ghyka, 1977, p. ix).

In the sense reported here, beauty is derived from these harmonic proportions – beauty *is* the apperception of these harmonic proportions, or rather their effect on the human psyche. Of course, these cannot be any random assembly of proportions. These ideas will be developed further; for now it is important to make a little detour and note the role of Pythagoras in the formulation of Plato's thought.

I conducted an earlier study (Mare, 2010) in which I discovered the mentor-like influence of Pythagoras on Plato. Plato is said to have visited the Pythagorean 'community' in southern Italy whereupon he was indoctrinated into the theory of Ideas and Numbers. This theory was not any component of the philosophy of Socrates, Plato's more direct teacher, so we could say that Platonic philosophy is a synthesis of Pythagorean and Socratic thought. Apparently, Plato was so impressed by what he saw at the Pythagorean community – or residential 'school,' if you like – that shortly upon returning home to Attica he promptly set up the Academy in its image. Tarnas (1991, p. 22) positions Pythagoras within the larger efflorescence of Greek thought:

> There was one major exception to this intellectual progress among the Greeks away from the mythic and toward the naturalistic, and this was Pythagoras. The dichotomy of religion and reason seems to have not so much pressed Pythagoras antithetically away from one in favor of the other, but rather provided for him an impetus toward synthesis.

[13] This title is made in reference to the *Timaeus*, where Plato says: "And it was then that all these kinds of things thus established received their shapes from the Ordering One, through the action of Ideas and Numbers" (Ghyka, 1977, p. ix).

> Indeed, his reputation among the ancients was that of a man whose genius was as much religious as scientific.

Today we might say "spiritual" rather than "religious;" nevertheless, the statement conveys the essential synergy of the quest to understand practical matters from within a larger, more inclusive – some would say 'divine' – framework that characterized the thinking from Pythagoras to Plato, on into Plotinus and St. Augustine, right through Ficino's Academy, to…what happened? After Scholasticism and the Enlightenment, this synergistic thought – the marriage of science and spirit – appears to have moved underground to become 'esoteric' knowledge, finally revived by Carl Jung. These earlier thinkers believed they *were* penetrating the Divine Mind, accessing, witnessing, and extracting the ordering principles of Creation. It is this sort of explicitly spiritual-oriented context in which sacred geometry has its foundation. With that in mind, let us return to the question of proportion.

Lawlor (1982, p. 4-5) provides a very useful introduction:

> In science today we are witnessing a general shift away from the assumption that the fundamental nature of matter can be considered from the point of view of substance (particles, quanta) to the concept that the fundamental nature of the material world is knowable only through its underlying patterns of wave forms.
>
> Both our organs of perception and the phenomenal world we perceive seem to be best understood as systems of pure pattern, or as geometric structures of form and proportion. Therefore, when many ancient cultures chose to examine reality through the metaphors of geometry and music (music being the study of the proportional laws of sound frequency), they were already very close to the position of our most contemporary science […] All our sense organs function in response to the geometrical or proportional – not quantitative – differences inherent in the stimuli they receive.

References

- Alexander, C., Ishikawa, S. & M. Silverstein (1977) *A pattern language: Towns, buildings, construction.* New York: Oxford University Press
- Aristotle (trans. by D. Ross) (1998) *Nicomachean ethics.* Oxford: Oxford World's Classics
- Arrows, F., Jacobs, J.L. & S. Ryan (2010) Anthropocentrism's antidote: Reclaiming our indigenous orientation to non-human teachers. *Critical Education,* Vol. 1, No. 3, 1-20
- Bachelard, G. (1969/1994) *The poetics of space.* Boston: Beacon Press
- Bentz, V.H. & J.J. Shapiro (1998) *Mindful inquiry in social research.* Thousand Oaks, CA: SAGE Publications

- Bhaktivedanta Swami Prabhupada, A.C. (ed.) (1989) *Bhagavad gita as it is.* Los Angeles: Bhaktivedanta Book Trust International, Inc.
- Bourassa, S.C. (1988) Toward a theory of landscape aesthetics. *Landscape and Urban Planning,* No. 15, 241-252
- Bourassa, S.C. (1990) A Paradigm for landscape aesthetics. *Environment and Behavior,* Vol. 22, No. 6, November
- Childs, M.C. (2004) *Squares: A public place design guide for urbanists.* Albuquerque, NM: University of New Mexico Press
- Confucius (trans. by A. Waley) (1992) *The Analects of Confucius.* New York: Quality Paperback Book Club
- Danto, A.C. (2003) *The abuse of beauty: Aesthetics and the concept of art.* Chicago: Open Court
- Davies, S. (2006) Aesthetic judgements, artworks and functional beauty. *The Philosophical Quarterly,* Vol. 36, No. 223, 224-241
- De Sousa, R. (2004) Is art an adaptation? Prospects for an evolutionary perspective on beauty. *The Journal of Aesthetics and Art Criticism,* 62:2, Spring
- Diessner, R., Frost, N. & T. Smith (2004) Describing the neoclassical psyche embedded in Sternberg's triangular theory of love. *Social Behavior and Personality,* No. 32, 683-690
- Diessner, R., Davis, L. & B. Toney (2009) Empirical relationships between beauty and justice: Testing Scarry and elaborating Danto. *Psychology of Aesthetics, Creativity, and the Arts,* Vol. 3, No. 4, 249-258
- Dissanayake, E. (1988) *What is art for?* Seattle: University of Washington Press
- Dissanayake, E. (1999) 'Making special:' An undescribed human universal and the core of a behavior of art. In B. Cooke & F. Tuner (eds.), *Biopoetics: Evolutionary Explorations in the Arts.* Lexington, KY: ICUS
- Ghyka, M. (1977) *The geometry of art and life.* New York: Dover Publications, Inc.
- Gill, E. (1944) Art in England now…As it seems to me. In *It All Goes Together: Selected Essays.* New York: Devin-Adair
- Gill, E. (1983) *A holy tradition of working: Passages from the writings of Eric Gill.* West Stockbridge, MA: Lindisfarne Press
- Goldberger, A.L. (1996) Fractals and the birth of Gothic: Reflections on the biological basis of creativity. *Molecular Psychiatry,* No. 1, 99-104
- Grammer, K., Fink, B., Moller, A.P. & R. Thornhill (2003) Darwinian aesthetics: Sexual selection and the biology of beauty. *Biological Review,* **78**, 385-407
- Habermas, J. (1984) *The theory of communicative action, vol. 1: Reason and the rationalization of society.* (trans. by T. McCarthy). Boston: Beacon Press
- Hagman, G. (2002) The sense of beauty. *International Journal of Psychoanalysis,* **83**, 661-674
- Hitchcock, H.R. (1958) *Architecture nineteenth and twentieth centuries.* Baltimore: Penguin Books
- Holmgren, D. (2002) *Permaculture: Principles & pathways beyond sustainability.* Hepburn, Australia: Holmgren Design Services
- Jaeger, W. (1943/1986) *Paideia: The ideals of Greek culture, Volume II.* New York: Oxford University Press

- Jantsch, E. (1975) *Design for evolution: Self-organization and planning in the life of human systems.* New York: George Braziller
- Joye, Y. (2007) Architectural lessons from environmental psychology: The case of biophilic architecture. *Review of General Psychology,* Vol. 11, No. 4, 305-328
- Jung, C.G. (1928) *Contributions to analytical psychology.* New York: Harcourt Brace
- Jung, C.G. (1959) *The archetypes and the collective unconscious.* New York: Pantheon
- Jung, C.G. (ed. by V. de Lazlo) (1990) *The basic writings of C.G. Jung.* Princeton, NJ: Bollingen Series, Princeton University Press
- Kellert, S. (1997) *Kinship to mastery: Biophilia in human evolution and development.* Washington, D.C.: Island Press
- Krier, L. (1998) *Architecture: Choice or fate.* Windsor, Berks, UK: Andreas Papadakis Publisher
- Lawlor, R, (1982/1997) *Sacred geometry: Philosophy and practice.* London: Thames & Hudson, Ltd.
- Mare, E.C. (2008) *What exactly is design?* Bellingham, WA: Village Design Institute
- Mare, E.C. (2009) *Design for consciousness: An exploration into the relationship between the built environment and human potential.* Bellingham, WA: Village Design Institute
- Mare, E.C. (2010) *Plato's academy: Organizational development of an ideal form.* Bellingham, WA: Village Design Institute
- Mare, E.C. (2011) *Beyond sustainability: The beauty effect.* Bellingham, WA: Village Design Institute
- Maturana, H.R. & F.J. Varela (1987/1998) *The tree of knowledge: The biological roots of human understanding.* Boston: Shambhala
- McHarg, I. (1967/1992) *Design with nature.* New York: John Wiley & Sons, Inc.
- Milliken, J. (2006) Aristotle's aesthetic ethics. *The Southern Journal of Philosophy,* Vol. XLIV
- Mollison, B. (1988/2004) *Permaculture: A designer's manual.* Tyalgum, Australia: Tagari Publications
- Morgan, G. (1986) *Images of organization.* Beverly Hills: SAGE Publications
- Muller, A. (1993) Visuelle prototypen und die physikalischen dimensionen von attraktivitat. In *Physiche Attraktivitat* (eds. R. Nikketa & M. Hassebrauck). Gottingen: Hogrefe
- Mumford, L. (1961) *The city in history: Its origins, its transformations, and its prospects.* San Diego: A Harvest Book
- Norberg-Schulz, C. (1984) *Genius loci: Towards a phenomenology of architecture.* New York: Rizzoli
- Orr, D. (1992) *Ecological literacy: Education and the transition to a postmodern world.* Albany: State University of New York Press
- Orr, D. (2002) *The nature of design: Ecology, culture, and human intention.* New York Fuller, R.B. (1969) *Utopia or oblivion: The prospects for humanity.* Toronto: Bantam Books
- Papanek, V. (1984/2009) *Design for the real world: Human ecology and social change.* Chicago: Academy Chicago Publishers
- Papanek, V. (1995) *The green imperative: Natural design for the real world.* New York: Thames and Hudson

- Plato (trans. by B. Jowett) (1937/1892) *The dialogues of Plato, vol. 1.* New York: Random House
- Plato (trans. by E. Segal) (1986) *The dialogues of Plato.* Toronto: Bantam Books
- Ramachandran, V. & W. Hirstein (1999) The science of art. *Journal of Consciousness Studies,* No. 6, 15-51
- Rapoport, A. & R.E. Kantnor (1967) Complexity and ambiguity in environmental design. *American Institute of Planners Journal,* July
- Salingaros, N.A. (2004) *Anti-architecture and deconstruction.* Solingen, Germany: Umbau-Verlag
- Santayana, G. (1986/1955) *The sense of beauty: Being the outline of aesthetic theory.* New York: Dover Publications, Inc.
- Scarry, E. (1999) *On beauty and being just.* Princeton, NJ: Princeton University Press
- Schipper, K. (1994) *The Taoist body.* Berkeley: University of California Press
- Scruton, R. (2009) *Beauty.* Oxford: Oxford University Press
- Storck, T. (2010) Seeking beauty in art: Some implications of a Thomistic statement about glass saws. *New Blackfriars*
- Tarnas, R. (1991) *The passion of the Western mind: Understanding the ideas that have shaped our world view.* New York: Ballantine Books
- Todd, N.J. & J. Todd (1994) *From eco-cities to living machines: Principles of ecological design.* Berkeley, CA: North Atlantic Books
- Turner, F. (1999) An ecopoetics of beauty and meaning. In B. Cooke & F. Turner (eds.), *Biopoetics: Evolutionary Explorations in the Arts.* Lexington, KY: ICUS
- Ulrich, R.S. (1983) Aesthetic and affective response to natural environments. In I. Altman & J.F. Wohlwill (eds.), *Human Behavior and the Environment: Volume 6,* (pp. 85-125). New York: Plenum Press
- Van der Ryn, S. & S. Cowan (1996/2007) *Ecological design.* Washington, D.C.: Island Press
- Varela, F.J., Thompson, E. & R. Rosch (1991/1999) *The embodied mind: Cognitive science and human experience.* Cambridge, MA: The MIT Press
- Walters, J.D. (2000) *Awaken to superconsciousness.* Nevada City, CA: Crystal Clarity Publishers
- Weber, M. (1968) *Economy and society: An outline of interpretive sociology.* (trans. by G. Roth & C. Wittich). New York: Bedminster Press
- Weber, M. (1992) *The protestant ethic and the spirit of capitalism.* Routledge: London
- Wenzel, C.H. (2006) Beauty in Kant and Confucius: A first step. *Journal of Chinese Philosophy,*
- Zelov, C. & P. Cousineau (eds.) (1997) *Design outlaws on the ecological frontier.* Easton, PA: Knossus Publishing