

RESTRUCTURING 21ST-CENTURY ARCHITECTURE THROUGH HUMAN INTELLIGENCE

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Abstract

This paper introduces a compelling new way of thinking about, teaching, and practicing architecture. Founded on the basis of how the human mind perceives and interacts with the built environment, we call this new design process "intelligent architecture". Perhaps surprisingly, scientifically-conceived rules for architectural design and building can lead to a more human architecture, one with a renewed respect for traditional methods of architectural design. This new process can also be extended by implementing new technologies. By applying the most recent scientific advances to architectural thinking, we can better appreciate the architectural heritage of the past, giving scientific insight into its origins and manner of conception. This development also reverses an unfortunate misunderstanding that required the future to erase the past rather than to learn from it.

Keywords

Architecture, adaptivity, intelligence, tradition, authenticity.

Introduction

For too long now, the circumstances of a global economy have directed the ebb and flow of intellectual and cultural exchange throughout the world. Skewed by the influence of media-driven societies, the architectural stage has been rigidly set by concepts and imagery that are irrelevant not only to their users, but equally to other cultures. As we look around the world, it is becoming more and more evident that we are not the masters of our own profession. Architecture has become the exclusive domain of the so-called "Star Architect" (*starchitect* in common usage), no longer operating as a conveyance, but as a usurper of culture and identity.

The distinguished Pakistani architect Hammad Husain expressed a widespread frustration with this phenomenon when he asked in 2003: *"What makes an architect famous? Is being famous directly proportional to being good?"*

If yes, then does it mean in the whole of Asia and Africa there are no architects good enough to be world-famous? (Husain, 2003). Not many architects from China, India, Russia, South America — i.e. the vast bulk of humanity — ever make it into the glossy architectural magazines.

How can anyone believe that a “Dutch Design Demigod” could know more about a place than the very people who were born and raised there? How can these *starchitects* espouse to know what is best for the rest of the world? More importantly, how do we combat the aesthetic authority that such individuals now exert over our place in the world?

The antithesis to this abstract aesthetization of the world is the concrete actualization and restructuring of how the built environment is conceived. This requires a blending of one’s intimate knowledge of culturally-specific values and beliefs with a 21st-Century understanding of how human intelligence affects the artifacts — i.e. buildings and places — that we create. Such knowledge comes through science and the scientific approach to understanding the world. Uncovering the foundations of the architectural experience through science leads us to the processes of human cognition and intelligence. Through this discipline the seeds of a new, intelligent architecture have been discovered.

Accepting human intelligence as a unifying principle for the architectural design process enables us to fundamentally restructure architectural education and practice, in a manner that leaves little room for idiosyncratic or ideological expressions. Efforts in this direction

have been attempted in the past, most notably by Christopher Alexander (Alexander *et. al.*, 1977) and by Ashraf Salama (1995; 2005). The proposals aroused more opposition than interest in the architectural community. Even after trenchant criticism of the present system of architectural education as being mostly irrelevant (Bothwell *et. al.*, 2004; Boyer & Mitgang, 1996), no reforms have ever been successfully implemented.

We now know with certainty that the human mind readily recognizes and seeks out coherent information in our surroundings (the material world). Meaning extracted from raw information from the built environment helps to tell us whether a place is healthy and nourishing, or deleterious and dangerous, etc. Information, and the intelligence that processes this information to make it meaningful, provides an integral link between humans and the physical reality that we perceive. This is crucial because this is how we establish our sense of wellbeing, making decisions such as fight-or-flight responses. We are sentient beings, neurologically wired to look for certain kinds of structure in the complex informational fields that surround us.

Innate intelligence represents the deepest type of information processing, common to all people, and thus is not the exclusive domain of architects. An engagement with the material world generates meaning and awareness for everyday human beings, but it takes training, practice, and discipline to understand the process by which this interaction occurs. This knowledge is essential for architects if we are to conceive the built environment in a way that connects to humans on this level. Architects

can employ this process to re-create built environments that utilize patterns, spaces, and textures in an effective manner to nourish human existence.

Taking as a point of departure the mind's compulsion to establish a connection with our environment, natural and human-made patterns serve as the principal conveyance of meaning about the world around us. The symbiotic relationship between ideas, images, texts, and biological forms helps to explain how human culture, consisting of created objects as information, essentially extends our biological bodies into our environment. Traditional architecture carries with it the same intrinsic structural order that underlies all physical and biological entities (Alexander, 2002-2005).

A Methodology for Architectural Design

Intelligent architecture is not prescriptive: it does not tell you to build transparent glass boxes; nor opaque white cubes with horizontal slit windows; nor buildings with curved shiny titanium surfaces. All such formal prescriptions are ultimately expressions of a visual ideology encapsulated in the architectural mantras of modernity as pseudo-religious belief, which has come to replace true religious beliefs (Salingaros, 2004). Intelligent architecture, on the other hand, represents evidence-based results found in the work of several individuals and groups (Alexander, 2002-2005; Heerwagen, 2005; Kellert, 2005; Kellert & Heerwagen, 2005; Krier, 1998; Salingaros, 2005; 2006; Wilson, 2007).

The science behind intelligent architecture underpins and ties together distinct new developing architectural movements and practices. It provides a common theoretical

support for Biophilic Design, Classical and Traditional Western Architecture, Traditional World Architectures, New Urbanism, Sustainable Architecture and Urbanism, and User-built Social Housing throughout the world. Each of these disciplines is finding that scientific evidence helps to structure and validate its methods. A brief summary of several decades of scientific research is impossible. In the context of this record, we can only give the reader an idea of how these techniques are applied to design in a real world, explained in a straightforward language. Note the sequence of design steps: the overall form of the building arises out of basic human concerns, and becomes clear only towards the end of the design process. Starting with a pre-conceived form is working from a conditioned response, not an intelligent response.

1. VISION. We start with no preconceptions of form, but instead generate a physiologically-nourishing vision of the building from the viewpoint of the user. Whereas studio courses teach architects to see initially and primarily what the building looks like from the outside, we design as seen from the inside. We conceive an organized whole whose interior and exterior are revealed simultaneously. This vision should include portions of the building at different scales, including very small details. We sketch (on paper and on a computer) different aspects of this vision, growing out of the question: "*What is the most wonderful/real/authentic building/shape/texture/space that I can imagine to house this activity?*".

2. TRADITION. Any thoughtful and sensitive architect will (or should) possess a treasure-store of mental references of the most glorious

examples of buildings from their culture's traditional practice. Those must be allowed to exert their influence, enriching without imposing any specific form on the present project. As the design works its way through the mind of the architect, it becomes inevitable that the final design will assume some characteristics of traditional buildings specific to that locality.

3. ORNAMENT. Architecture and ornament (ordered detail) are one and the same thing, ornament being simply architecture on the smaller human scales of 1mm-1m. The appropriate ornament supports the forms on the larger scales. Numerous sketches of the project must be made on all different scales, from the size of the entire building, to intermediate scales, down to details on the human scales. We make full-size mock-ups of different portions of the building to judge relationships among the components.

4. TRANSITIONS. The form arises out of individual elements from the user's optical perspective and physical movement. We design entry-points, circulation, transitions, path-connectivity, and working spaces from the inside. Every decision comes from a mental extrapolation of the experience of inhabiting those spaces. This approach subordinates formal spatial concerns to the connectivity of lived spaces. It is essential that structures built primarily to help connections are just as accommodating to human sensibilities as the spatial nodes themselves.

5. PARTICIPATION. We devote energy and time to conducting in-depth question sessions with the actual eventual users of the building, from the people who will be using it full-time, to occasional future users. Ask them: "*What is your VISION of the most wonderful building*

to achieve this task? Please describe the approach, entry, working area, light, trees, recreation area, etc. of this building as you would ideally like to experience." Collect these surveys, and give them priority in the design process over and above any formal concerns, and even the architect's initial ideas.

6. MATERIALS. We try to use indigenous materials. Usually, the most appropriate materials are local vernacular materials, as they help to extend the mental parameters of the structure in the immediate setting. Structural decisions must first and foremost arise out of concerns of adaptivity to local climate and social customs. Towards that end, one can ask how contemporary technology can contribute to the overall tectonic goal. There is no need to exclude high-tech materials, just as there is no need to exclude local materials. Technology alone should not dictate the form or expression of a building, since its conception establishes a distance between humans and the world.

7. URBAN. Attach the building design to the existing urban fabric as intricately as possible. If there is none in place, then carefully design urban fabric that encourages maximal pedestrian connectivity around the building. Blend in trees, natural forms, and water as much as possible, not as decoration or formal *appliqué*. Give priority to human scale and nature rather than to cars. Consider approach and transportation that will reinforce adjoining patterns of space and circulation. The new building should blend seamlessly into the existing complexity of nature, built form, and human activity in the immediate region.

8. FORM. A final decision must be made as to the overall form of the building. We usually

leave the form unspecified as long as possible, though it may have occurred in the architect's initial vision. Even if the architect had some clear vision of the building's form, all the above design considerations should have invariably adapted that form to accommodate human needs, as outlined here. Thus, no form can survive unchanged during an adaptive design process without negating the human dimension, and the architect must recognize this.

While this series of design steps might seem, at first glance, to outline methods familiar to practicing architects, the sequence is intended to redirect the design process away from any preconceived or prematurely-conceived expression. That would negate the mind's ability to establish the needed neurological connections.

We are using this eight-fold method to design new buildings and to repair older buildings so they become more humanly adaptive. This is precisely how architects used to construct buildings in all cultures. Those are the buildings that are most valued today by everyday people the world over. It is through intelligent awareness that these structures speak to us and seem to be touching our soul. We don't however advocate a gratuitous return to traditional design methods, since the values, beliefs, and physical context for the underlying elements of design are always changing. Our method relies on recent scientific results. Perhaps surprisingly, these investigations have led to an increased understanding of the intrinsic value of religion and traditional culture for humankind's development.

During the second part of the twentieth century, people were told that creativity depended upon throwing off any preconceptions one

might have. That is a misleading concept. Creativity is intelligent only when we have general working principles to build upon. Unguided design only leads to frustration, which in turn forces designers to copy something already realized. Architects are nowadays psychologically conditioned to turn away from traditional-looking solutions, yet are not given the design tools to create human environments. What is left is to copy what the currently fashionable *starchitects* are designing. With such a frustrated mind, you inevitably resort to copying what is assumed to be originality in others. Thus, the quest for originality has turned into mindless conformity.

There is more at stake here than architecture alone. The very fabric of culture and society depends on how human beings view their fellow citizens, and how they manage the built environment. Critics who wish to dismiss our program do so as a defensive gesture. In our effort to help construct/conceive a better world we have exposed the vested power and interests of an elite minority. It is unfortunate that those individuals, whether knowingly or not, participated in a process that has been slowly eroding humankind's architectural conscience. Worst of all, generations of architects the world over have been misled to do the same thing. Many of those students from the traditional world have returned to their countries as unwitting agents of a destructive western form of aesthetic hegemony.

Criteria for an Intelligent Architecture

Intelligent architecture is responsive to human needs and sensibilities through adaptation to existing buildings and nature. This is a new way of viewing the world a way of connecting to

it, and to ourselves — yet it is very much the same as the most ancient ways of connecting (Alexander, 2002-2005). It provides a way of judging whether a building or piece of urban environment is good or bad for our emotional health. Yes, a building can be either good or bad, to different degrees (Salingaros, 2006). People don't need experts to tell them whether a building is good or bad — they are fully capable of judging for themselves. Here's the method — just ask yourself the question:

“DOES THIS BUILDING MAKE ME FEEL MORE ALIVE, OR LESS ALIVE?”

Note the specific nature of the question. It does not ask: “Do you like this building?” or: “Does this building make you feel excited?” since those answers lead to ambiguous conclusions. Likes and dislikes are due to individual preferences overlaid with educational conditioning. It is hard to distinguish what is influencing our decision. In a similar way, emotional excitement could be due to either pleasure or alarm, and again, it is often difficult to distinguish between these two physiologically opposite responses. The question instead digs deep into the subconscious networks that constitute human intelligence, and seeks to identify a building with our own living structure. We use the neural circuits already evolved to connect us to our environment.

A second question examines the coherence of a building. This is a very easy method for judging the coherence of highly complex visual structures. Pick any identifiable subunit of the building, some obvious component (such as a wall, column, doorway, window, cornice, etc.), and ask yourself:

“DOES THE OVERALL LIFE OF THE BUILDING DIMINISH IF I COULD MOVE THIS PIECE OR CHANGE IT IN ANY WAY; OR EVEN REMOVE IT ALTOGETHER?”

In a good building the answer is yes, for each piece, regardless of size. Every piece belongs exactly in its place, and has exactly the right shape and materials to reinforce the overall coherence of the whole. It contributes to unity and adaptivity. In a lesser building, on the other hand, pieces are irrelevant and hardly belong to the whole. They have become decoration (i.e., structure that has no meaning or purpose, and is added solely for fashion). Removing them or drastically changing them does not alter the overall coherence, since it is nonexistent. Why, then, are they included? Style is not a good justification; it is so superficial and trivial a reason as to be meaningless. If you as the user can envision a portion of a building improved — so as to make it more adaptive in its use and in its direct physiological impact on you — then the architect has not done his or her job of seeking coherence, but has instead imposed arbitrary forms or a formal compositional bias.

The brain, being capable of highly-sophisticated computations, instantly evaluates the geometrical coherence of any structure. The output is through emotion (sensation) linked to a physiological state (either alarm, or calm). These are the physiological precursors to any conscious system of values. To profit from this mechanism, however, we need to break out of the modern paradigm and the myopic vision of others. For example, contrary to what some *starchitects* claim, our technology does not dictate any particular architectural style. If we look beyond the signs and symbolism of the traditional architectures of the world we

can discover, through their physical presence, an informational content that speaks to us on a human level. Empirically, traditional architecture had scaling, materiality, and a sensibility towards construction, proportion, and human nature. It is this quality that characterizes timeless architecture.

Clues from Biology

To better understand how humans interface with architecture, we must go directly to the underlying constituents of architecture, the basic building blocks as it were. These pre-stylized, pre-cultural, unaffected, yet essential expressions are now identifiable and quantifiable through science. We have found genetic algorithms, Darwinian processes, emergence, capillarity, fractal structure, membrane interfaces, information compression, small-world networks, inverse power-law scaling, etc. playing a central role in how the built environment functions. We now offer these concepts in an architectural language that practitioners might use to improve their work (Alexander, 2002-2005; Salingaros, 2005; 2006).

Knowledge from biology, robotics, and artificial intelligence can be applied to design so as to extend the human experience, but not in an iconic, superficial manner (Salingaros & Masden, 2006; 2007). The key to a new architectural form resides in the knowledge of how physical/biological structure evolves and holds together; knowledge of complex interacting systems; knowledge of the adaptivity of forms to forces and changing conditions; and knowledge of how our intelligence binds us with the physical world. These processes allow us to understand the evolution of increasingly complex forms,

as opposed to the abstraction of forms driven towards a singular expression.

At the top of the evolutionary ladder lies the complex neuronal system that makes human intelligence possible. In addition to storing knowledge in their brains' neural circuits, human beings also habitually use their built environment as an extension of biological memory. Books, artifacts, song, ornament, and social patterns represent the "collective memory" of a particular culture. Represented memory encoded in traditional buildings has been guiding architecture for millennia. This powerful repository of what we already know about our responses to environmental structure can be as apparently trivial as a particular ornament, a color, a space of certain proportions, or the texture of a wall. It is through intelligence that architecture reveals itself to us in form, texture, color, and scale.

Socio-geometrical patterns embedded in traditional architecture and urbanism complement the inherited knowledge encoded in texts and oral literary traditions throughout the world. These externalizations of brain functions encode information derived from experience over the entire course of human evolution (Salingaros, 2005; 2006). Collective memory thus provides the foundation of culture and civilization. It is only recently that the patterns observed in traditional cultures, coming from innate human preferences, were found to have a genetic basis (Heerwagen, 2005; Kellert, 2005; Kellert & Heerwagen, 2007; Wilson, 2007).

Built knowledge (represented in the built environment) is both complex and irreducible — i.e., it is very difficult to simplify and transfer

into written text. Christopher Alexander made a first attempt to do that in his *Pattern Language* (Alexander *et. al.*, 1977). Vilified by the architectural establishment, this classification has nevertheless won support from the computer science community for its visionary results now used to organize software complexity. When we begin to see the traditional built environment as an extension (an external repository) of human memory, we realize just how intricately biology is linked with architecture. This explains why humanist architects are sensitive to feedback from their design, and respectful to tradition from which they can profit.

The clearest statements of architectural theory have always drawn upon epistemology, being concerned with language and logic (although much of contemporary theory wanders off into meaningless directions). Even so, the enterprise of epistemology is generally detached from evolved human thought, since the latter involves emotion and physiological processes. Sensations and biological states are essential to knowledge, and pattern recognition helps to generate our identity. Truth and reality have biological and social origins. A state of mental understanding is inseparable from the neurobiology of emotions and complex bodily responses. Brain-based reality is thus emotional; a marked difference from its impersonal philosophically-based counterpart.

Culture as a Manifestation of Human Intelligence

Human beings are unique in that they merge their physical and psychological needs. This is accomplished through culturally-conceived expressions that stem from innate urges to make objects ranging from hand-held artifacts and ornament, to buildings and cities. More

than just seeking to provide basic shelter, architecture throughout the ages has found expression in the application of these life-affirming urges through human intelligence. The same intelligence produces all cultural elements: dance, music, song, sculpture, and painting. Trying to separate artifacts from the greater context of culture — defined by religion, mythology, and social patterns — goes against the nature of humanity. Complex forms created by human beings are part of a larger, all-encompassing matrix extending human intelligence.

Separation nevertheless does occur, leading to the fragmentation and loss of intelligence stored in the artifacts of a culture. This is exactly what happened during the past several decades, with the propagation of western 20th-Century architectural forms around the world. The problem with this occurrence is that any cultural element separated from its human connection becomes vulnerable to loss of meaning and relevance. Once removed from its cultural context, there is no real (that is, an obviously practical) reason for its survival, or even for its existence as an isolated entity. In this condition of “not belonging”, the anchor points of human culture seem out-of-place, and are all too often replaced by meaningless images of industrial consumption.

Creativity, driven by human intelligence, has been the source of the incredible richness of cultures throughout history. Human beings ceaselessly strive to give form to their advancing intelligence in the complexity and organization of their greatest cultural expressions. However, in the last century of human development social, political, and economic dynamics have

begun to erode both culture and identity. In the struggle to demystify the world around us, nature and all that it offers through direct engagement has been supplanted by human ignorance/arrogance. Industrialization may lead to advancement in a society, but it does not advance the culture. The fact that cultural expression satisfies deep inner needs (biological, physical, and mental) has been overlooked in the past few decades, in an effort to clear away supposedly useless relics of the past. People continue to mindlessly throw out some of humankind's most valuable artifacts, buildings, and traditions as if they were cleaning out accumulated junk.

Nowadays, sadly enough, human intelligence is often applied as a negation of itself and of humanity. Some people reject the natural, the simple, and the unaffected as belonging to the past (and thus, to a certain way of thinking, inappropriate for our times). They reject the traditional sources of basic human pleasures upon which many cultural traditions grew. And yet, those simple pleasures are the result of an incredibly complex set of interactions. This turning away from nature and humanity's relation to the physical world is a regression to an overly simplistic (unintelligent) conception of the world.

Cynics observe destruction of the built environment (coupled with a breaking down of human values) with detachment, by not getting emotionally involved. They see a turning away from complex inherited values as an inevitable simplification of contemporary humanity. The more intellectual among them come up with arguments involving "novelty", "progress", and "expressiveness", which serve

only to justify their own insensitivity (Salingaros, 2004). Those among us who see a tragic loss for civilization, and try to reverse it, are branded as romantics and conservatives. But far from being either romantic or conservative, people who value human qualities embedded in cultural artifacts are in fact exhibiting a greater sense of intelligent awareness.

Circumventing the illogical but self-sustaining nature of non-humanist practices requires a complete restructuring of architecture, its education and application (Alexander, 2002-2005; Salama, 1995; 2005). So pervasive are the expressions of this soulless contemporary condition, however, that no logical argument can hope to redirect its maddening forms. To date, architecture students and practicing architects throughout the world have had to concede to the dictates of this globalized show of architectural force. Despite the efforts of a growing minority, the confusing proposals of 20th-Century architectural theory continue to lead us down the wrong road (Salingaros, 2004).

Multiple Solutions and Adaptive Design

An intelligent system is able to solve problems. It finds different relationships that lead to a solution, each solution being a network of connections. There is no SINGLE solution to a complex problem, but instead a fairly broad set of related solutions. Systems usually have available many alternative pathways, leading to alternative but equally valid configurations. Biology is marked not by rigid conformity, but by adapting a complex template to changing conditions. Consider the genetic coding for an organism. Siblings of more complex animals, which share genetic information, turn out to

have somewhat different characteristics. It is only in the lowest levels of design complexity that we find genuine organismic modularity: for example, the same virus in a billion identical copies.

This variability is an important component of adaptive architecture. A building designed in an intelligent manner can replace some of its components without reducing the effectiveness of the whole. It is not “unique”. It can change itself, just as an organism continually replaces most of its cells as they age, wear out, or die. It can evolve to adapt to changing circumstances without mutating into a totally distinct (identifiably different) typological entity. A similar intelligent solution is certainly possible, so that parts of the building could be changed to shift the overall design to one of its many close equivalents. Historical buildings have been adapted to changing needs over the centuries, and they retain a high level of intelligence (Brand, 1995).

A reader might get the wrong impression of a “perfect” building in which nothing can be changed. In an intelligent building, each component supports overall coherence by making an observable contribution to the whole. The building can be changed, sometimes drastically, by replacing components, as long as they continue to support the overall coherence (analogous to the wholeness of an organism). It is this systemic connectivity that is important — the end result of an intelligent process of solution — and not any individual piece (although some pieces are more crucial than others). Any successful adaptation to changing circumstances and uses preserves a high degree of internal relationships that characterize coherence.

Adaptivity is impossible without intelligence. The system has to respond to a multitude of forces in the environment (for buildings these are human needs and sensibilities, surrounding buildings, natural features, etc.). It must compute a set of valid solutions that satisfy those forces, otherwise it will perish. The extra-adaptive constraints imposed on the problem (such as budget, availability of materials, building regulations) choose from among the possible good solutions. All of these decisions are based upon interactivity and reasoned choice from among many alternatives, each of which has to be evaluated using criteria of adaptivity.

Formal designs, by contrast, are far more restrictive. The opposite of an intelligent process is to impose a preconceived solution based on some formal criteria (such as a fixed compositional method of simple geometries). Formality and adaptivity are incompatible. In a formal, iconic building, each component has to conform to a fixed abstraction, so it may be impossible to change or substitute a single piece (but this is the opposite reason from why one cannot change a component that contributes to overall system coherence). An iconic building usually cannot adapt to changing circumstances. It was non-adaptive to existing forces when it was conceived and built, and remains non-adaptive to all new forces developing in the future.

Intelligence as a Model for Architecture

Nature has evolved an enormously complex neuronal system that enables the formation of thoughts, and couples it to our body, which then executes the results of the intelligence mechanism. Input to the human intelligence system comes both from our sensory system

(connecting us to the external world) and from internal memory. When the neuronal system is active (which is all of the time, even in sleep), connections are made, patterns formed, and new links and conclusions emerge. This system has enabled us to successfully lead our lives over millions of years, adjusting remarkably to changing circumstances and habitats. Human adaptability is one of the marvels of nature, and it is due primarily to human intelligence.

People build traditionally according to what their mind tells them consciously and subconsciously, unless they are copying an explicit image. The brain guides the hand and eye in an intelligent, self-correcting process. Emergent forms, spaces, structural elements, ornamentation, etc. are just as much a reflection of the human mind as they are products of utilitarian functions. That, at least, was the case until the twentieth century, when iconic formalism was substituted for physical and emotional needs. By dismissing the expression of innate patterns in the mind, an iconic architecture detaches itself from human intelligence.

Let's not confuse intelligence with intellectualization. Intelligent architecture seeks to give unaffected form to what the human mind needs to allow it to engage with the material world. Once constructed in these terms, the mind transfers ordered information to a mental extrapolation of this experience. If instead this becomes an intellectualized conception, then the experience is illusory (fictitious). America can pride itself in creating some of the most intellectual and thus inhuman spaces ever conceived, but to what avail? Since these places are so unsettling that no one wishes to occupy them, they have become nothing more

than symbols of this intellectualized condition.

Architecture still remains a mystery to most people, just the way rational thought was a mystery during the Dark Ages of human existence. This lack of an intelligent relationship between people and architecture has for too long been the terrain on which *starchitects* operate. Human beings today are smarter than our species has ever been; therefore, it is unacceptable that architecture continues to be rendered in a semi-mystical fashion. Architects are still necessary to guide and mediate the design process to help the client, but non-architects need to re-assert their right to access the body of architectural knowledge. When they do so, they will demand a far greater clarity of understanding than architects themselves accept today.

Thus far, the powers that lead society have not been very intelligent about creating the contemporary built environment. By stubbornly sticking to a narrow set of images, they perpetuate the same "dumb" typologies that architects have been following ever since the 1920s. Even more astonishing is how vast technological power is now applied to continue producing these "dumb" typologies in an ever-narrowing spectrum of variations. Here, surely, is a misapplication of technology to support an obsolete stylistic "look" instead of generating an infinite variety of new adaptive possibilities. But then, technology has periodically been misused because it lacks an innate mechanism for selection. Whoever applies the technology can either use it for progress or to arrest progress.

Extremely expensive high-tech buildings are erected, which turn out to be perfectly "dumb"

as far as providing an intelligent and sensual treat to the user. Their form and surface offer no surprise, no contained information, no anticipation of discovery, and no variation from certain expected stereotypes. Contemporary buildings still follow the minimalist typology in some way or another. They are either unrepentantly and intentionally boring, or they try to distinguish themselves with an initial shock. We receive a thrill (a surge of adrenaline) from an unexpected, shiny, exaggerated, or unbalanced form. After this first statement of defiance to the dull modernist aesthetic, however, there is nothing further to communicate. The architectural shock is empty of meaning, just as much as the message from competing minimalist structures.

Iconic Versus Human Architecture

Building in a way that utilizes scientific ideas and knowledge can once again make architecture a great HUMAN achievement. A new building constructed according to intelligent methodology benefits all its users in a direct, nourishing, and visceral manner. If they wish, architects can now utilize this knowledge to fix their designs positively to human physiology. The public loves a great building (be it a historic building, or a new building that exhibits this intelligence) when they feel in harmony with it, and when it reinforces their place in the world. It is a joy to look at, and everyone engages with it as an equal participant, since it establishes a fundamental parity between user and architect.

By contrast, an architect seeking only to garner public attention hopes that everyone will revere his/her building for iconic reasons, as spectacle, with the user subjugated to the

greatness of the architect. The “star” system of design makes a building the achievement of a single individual based on his/her personal preference or whim. The public might still seem to admire such a building, but only because some “expert” declares it to be a great work of architecture. This manufactured admiration does not arise internally. Personal whims and stylized expressions serve only to distance the user from the architecture, because they negate the greater spectrum of neurological connections.

Science has been co-opted and utilized in only a superficial manner, to generate non-adaptive iconic expressions (Salingaros, 2004). Young architects live with great disappointment, finding themselves in a career that places a greater value on imageability than upon inherent human qualities. While pretending to uncover new architectural principles, charismatic *starchitects* instead cultivate media attention and political connections, court the influential critics, and assume an aura of aesthetic refinement. This is how they continue to garner the most significant architectural commissions of our time; it is not from any real concern for civilization.

The global business-industrial complex has identified itself with a narrow architectural style. Ensnared in the western paradigm where the perception of architectural novelty is mistaken for progress, many countries have fallen victims to this image-based architecture, further encouraging the commodification of its form. The official media imply that it is somehow better than what is deemed non-modern. As each new architectural frenzy fades, its telling marks will be forever imprinted on those

who have to live and work in the shadow of its products. If we look more closely at the phenomenon of “signature” architecture we will see that, contrary to its claims of giving greater significance to “place”, it actually works to subvert a true sense of place through a loss of identity. When considering cities with “signature” buildings in the developing world, what comes to mind first are those buildings’ images, not the people and places that constitute the real culture of these localities.

In our times, the effects of the global economy are undoing the magnificent expressions of 5,000-year-old cultures in the rest of the world. Western interventions negate the identity and values of people, in effect cutting them from their sense of belonging in the world. Human architecture is informed by its material presence, not by image, yet our technological resources are focused on replacing civilization by images. Larger economic interests are using *starchitects* as part of their drive to profit from the rest of the world, displacing cultural and ideological values in the process. Rather than helping civilization toward the ultimate expression of our own time and place, this application of advanced technology serves only their own interest.

Everyday people intuitively perceive contemporary architecture and urbanism to be disconnected from and opposed to traditional human values that they hold sacred. Many see the destructive process of 20th-Century architecture as a combative gesture towards all traditional cultures, their values, and beliefs (Salingaros, 2006). Such practices present an affront to many religions and cultures, by negating the forms of their architectural

expressions. So-called modern forms counteract the basic principle of connecting an individual to the universe — hence to God — through a more traditional incorporation of color, sculpture, and calligraphy, in effect denying sensory connections. Temples, mosques, and churches conveying meaning via polychrome sculptures, tile work, reliefs, frescoes, and mosaics have no place in this sterile and “industrial” world order.

Governments that seek international recognition by way of hiring *starchitects* must be made to see that they themselves are complicit in negating the inherent values and knowledge of their own citizens. Architecture as a “will to form” was never concerned with engaging the user in a positive manner. It is an architecture of spectacle, purged of its need for meaning and context, which has been allowed to construct its own reality. Its realization negates other forms of sensory perception necessary for the human dimension of lived experience.

For several decades, modernist architects have turned away from traditional forms of tectonic expression. And yet, it has been found that the underlying relationship that people have with the physical presence of architecture comes from the material and phenomenological dimensions of such work. It cannot be denied that in the past, superficial decoration departed from empirical evidence of physicality, but that was more a product of an aesthetic impulse unchecked by the limited science of the times. Today we have the scientific knowledge to head off such deviating forms, not because of style, but because of their lack of perceptual coherence (Salingaros, 2006).

In this era of globalization, advanced knowledge

that only contemporary science can provide is readily available to everyone. The new paradigm in architecture links traditional models and typologies with the biological structure of human beings, and the physical structure of the universe (Salingaros, 2004). Developing countries, in an effort to maintain their place in the world, will instead find the source of their new architecture within arm's reach: in the materials and practices of their region. Through this record they will understand the underlying principles that govern the manner in which the physical world reveals itself. Hopefully, they will recognize at once its capacity for new honest expression. Honest and authentic generative devices evolve with an uncanny similarity to the rich vernaculars of their local traditions.

Expectations of Perpetual Novelty

How does one distinguish between contemporary architects who will likely have a positive or negative effect on the environment? Who is egotistical/iconic, and who is humanistic/adaptive? All architects claim to be genuinely interested in humanity, so what they say cannot be used to judge either their intentions or their products. Ashraf Salama made a perceptive comment about this: "*I wish I could see famous architects able to solve a housing problem in a village or in a dense urban region, or able to introduce change in a poor community, or a squatter settlement. While famous architects are immersing themselves in exploring new innovations to foster their fame, two-thirds of the world's population lacks shelter or lives in substandard houses.*" (Salama, 2003). Champions of adaptive architecture are actively involved in designing urban settlements and social housing, whereas *starchitects* are conspicuously absent.

Since early European modernism, the western expression of architecture has been on a roller coaster. Minimalist modernism reduced expressions to a single typology, severely reducing freedom of architectural expression — a statement that can be mathematically proven! (Salingaros, 2006). The point where we find ourselves nowadays is different, but not much better. Everyone is caught up by the western phenomenon wherein *starchitects* promise a new architecture hyped by the global media.

The legitimization of form over content, however, seen in pedagogical positions going back to the Bauhaus, serves only to validate an architecture of appearances. Detached from the world of lived experience, architecture as image reveals itself as nothing more than a fashionable commodity. As such, it is subject to the rules of constant change characteristic of the fashion marketplace. This type of architecture cannot respect the physiological needs of human beings. Looking around us verifies that these recent architectural practices have effectively erased the design and building traditions of the past, and with them the vital web of urban culture in society. Introducing such abstractions during the twentieth century had catastrophic consequences for our cities' urban fabrics, and for the human qualities of individual buildings (Salingaros, 2005). With each structure removed to make way for the modern world there was a loss of intelligence embedded in the built environment.

Left unchallenged, this phenomenon continues to perpetuate itself by way of its global imageability. Following closely in its wake is the endless and empty rhetoric of

contemporary architectural theorists. Looking outside architecture as a means to garner greater validity, their speculations have run the full gamut from misunderstood mathematics, to the poorly-conceived postulates of French philosophers, to the loosely-construed intimation of linguistics into the domain of architectural design. Each new “theory” offered yet another invented way to conceptualize architecture in the absence of an intelligent basis, and thus failed to provide everyday architects with any intelligent tools for architectural innovation. In a market driven by the architectural media, *starchitects* have set unattainable standards (because those rely on unrealistic expectations). Practicing architects, expecting this work to elevate our profession, are beginning to sense that it only serves to propel the *starchitects*. And in the process, it has made the job of real-world architects working with real budgets and real clients impossible.

It is incredible that teachers of architecture give their students incomprehensible texts written by *starchitects* (and by architectural academics who wish to bask in the fame of those *starchitects*) as something useful to study. In a frenzy that idolizes anyone promising “new” forms, students are compelled to read this stuff. One prominent *starchitect* today uses pornography to sell his otherwise nonsensical books. Yet he, and other individuals like him, are continually rewarded by lucrative commissions, choice administrative and faculty appointments at our most prestigious universities, gold medals, and major architectural prizes. That visible success naturally justifies students reading such intermittently salacious texts with great attention. The students get the message: copy these tactics and you too can become

a *starchitect*.

Ideas of style have a stranglehold on contemporary architecture. The pursuit of the “theoretical”, which has obsessively driven the architectural world since early modernism, has given us little that strengthens the human lived experience via the built environment. Despite all the rhetoric declaring that this architecture was responding to profound social, political, and scientific discoveries, it in fact was driven by a rather narrow agenda. Over time, the imposition of an identifiable (signature) style became the road to recognition and power. This has nothing to do with human needs and sensibilities, but everything to do with successful marketing. Its phenomenal success is due to the continuous mutation of the original industrial style so as to keep its practitioners comfortably in control of both architectural practice and education.

Conclusion

A creative revolution is now possible, one that will transform the built environment in wonderfully human ways. A new intelligent architecture can impart a greater sense of humanity to the city and to the world. It is up to world architects to set into motion some of the greatest scientific ideas of our times, and make architecture once again our highest cultural expression. Architecture that emerges out of an intelligent process of interactive thinking naturally develops towards a design adaptive to human beings. It is better fit for human habitation because, coming from what is human, it nourishes our sensory needs and sensibilities.

To survive globalization, our civilization must be

grounded in an intelligent understanding of “place”. The powers that shape our countries have a responsibility to not allow international designers a free hand to make a spectacle of a region’s place in the world. This is not to say that collaboration should not occur. Tremendous knowledge can be gained through cross-cultural collaboration with those who have an understanding of intelligent architecture. They can help local architects create new adaptive forms that re-establish a vernacular specific to their own culture; i.e., an architectural language that speaks to the citizens of each country. Restructuring architecture to resonate from within the rich history of human societies will provide a greater meaning in people’s lives and a sense of belonging to their collective spirit.

The main obstacle we see facing us is that of institutions (organizations, governments) validating non-humanist architecture. Seduced by the latest fashion, they are eager to commission the current crop of *starchitects*. Whether this choice is due to a misguided conviction about High Art, or clever global marketing that preys upon hidden feelings of cultural insecurity, the result is disastrous. The international press will repay their expense with praise for the “enlightened” country sponsoring the latest “signature” building, but that is part of the marketing strategy. It’s only a token reward to the sponsor’s ego. The long-term reality is far darker. For a brief moment of publicity, many precious (and irreplaceable) commodities have been sacrificed, beginning with the sensibilities of that country’s architects, and ending with the country’s historic culture.

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