A. The quality of living structure and the healing effect

There exists overwhelming evidence that biophilic environments, both natural and artificial, exert a healing effect on the human body. This healing process acts by association on the designer’s own body when he or she is creating biophilic design. The biophilic effect is taking place here at the closest, most intimate scale, making the designer healthier through feedback during the act of creation or making. The opposite effect is also probably true: designing and building anti-biophilic structures is at best not a healing process. Neutral or negative feedback on the designer would be counterbalanced by some other positive effect during the act of design (more on that later).

Christopher Alexander described the “quality without a name” — the “QWAN” — that for practical purposes can indeed be named as the “quality of living structure” (Alexander, 1979). It describes systemic harmony, organized complexity, and coherence in our surroundings, and is present in many structures that we are exposed to. We receive nourishment from artifacts and environmental settings that possess the quality of living structure to any significant degree. The quality of living structure provides a universal criterion to judge whether situations and settings produce a healing effect. The interaction is also mutual: by creating objects and environments having this positive emotional quality, we experience the healing process in our own bodies.

As we read Alexander after having learned about the biophilic basis of adaptive design, we recognize the quality of living structure as depending strongly upon biophilia. And yet it adds many more layers of connectivity. The quality of living structure incorporates other factors, such as the evolved interactions among human beings, and between social groups and the built environment. These complex ways of interacting and connecting are discoverable, and can be documented as patterns (Alexander et al., 1977). Patterns that describe healthy socio-geometric configurations in human society go beyond biophilia, which is our inherited response to biological forms and natural environments.

We could compute various parameters of our environment analytically, and then check whether it matches the known structural framework for biological systems. But the best method of all is to use the massively parallel computer that is the
human perceptive system. That is exquisitely designed to detect the quality of living structure in our surroundings. The results of such a neural computation do not present a quantitative answer, but instead an unmistakable feeling in our body due to hormones and nerve signals. Our response tells us whether the environment contains living structure or not.

To get an accurate reading of the quality of living structure, therefore, we focus on our spontaneous feelings (uncontaminated by what we are taught to like, other people’s opinion, fashion, or ideology). A design solution that has been constrained by socio-geometric patterns is expected to possess the quality of living structure. A physical setting or spatial configuration can be evaluated only in person, directly, using one’s senses — all of them. That is why ultimately, our perceptual system is the only judge of what produces the highest positive emotional qualities. Those judgments cannot be arrived at analytically, or from a picture, or by intellectual arguments. The body’s complex response is the smartest criterion.

**B. Patterns as living configurations**

Socio-geometric patterns document the wellbeing of people interacting with specific geometries of the built environment. When we try to explain Alexandrine patterns through biophilia, we succeed with many but by no means all of them. What is taking place outside biophilia so as to generate all the other patterns? Although the positive emotional effect of those patterns is the same as that produced by biophilic environments, there is no direct application here of organic geometry. Non-biophilic patterns document our complex interactions with built spaces, geometries, and other human beings, going beyond the primary recognition of persons as biological organisms. Some of these additional interactions occur on a higher organizational level, the level of social interactions.

Specific geometrical configurations, spaces, structures, settings, surfaces, and connective frameworks act as catalysts for human contact, and thus generate a healing effect through their geometry. Those special settings define design patterns. By analogy, chemical catalysts also act indirectly: without them certain critical interactions could never occur, yet the catalyst itself is fixed and never changes. Hence the large number of design patterns that are passive, yet essential to foster human life and social interactions.

All the effort that Alexander and others put into documenting design patterns was geared towards one objective: to bring out people’s humanity. The quality of living structure frees people from environmental stresses due to objects and spaces whose geometry could be making us feel anxious and unwell. This protection from stress liberates us to be more fully human (and also keeps us healthy). A high quality of living structure allows people to live life more fully, helped rather than inhibited by their immediate built environment. Freed from anxiety induced by hostile buildings, spaces, and surfaces, we can allow our emotions to blossom on the basic level of our consciousness.
Architecture that aims for user wellbeing, and for healing stimulation coming from the geometry of the environment, must include patterns. Otherwise, the environmental healing effect will never occur, or it might happen accidentally, which is not a good working method for someone who wants to understand how to achieve consistent results. A living environment frees people to move around and interact, to combine their lives with the lives of others, and that sensation (conscious or subconscious) comes from very specific constraints placed on design. Successful constraints can be re-used to create living environments again and again, or in a different location altogether.

C. Patterns in the computer world

The quality of living structure has not yet caught on among architects, but it was picked up by computer scientists (under its original term QWAN). The computer science community adopted the pattern method, which led to major developments still going on today. Evolving software is becoming more, not less complex, and software patterns provide a very useful tool for organizing complexity. (Note the contradiction with the 20th Century simplification of building form and urban fabric, which abandoned design patterns.) Patterns are especially appreciated for helping to structure and catalyze productive human interactions. Today, those applications cover a large variety of topics, including the following:

1. Software patterns help to organize the complexity of computer programs, by identifying re-usable complex modules. Patterns can be shared and re-combined into new, more complex programs.

2. Antipatterns, which seem like a good solution but ultimately don't work, are documented. Otherwise, the community just keeps re-inventing them, making the same mistake over and over again.

3. Real-time human interaction patterns are a resource for teams working on software development. These organizational patterns help to manage and optimize group collaboration projects.

4. Design patterns for human-machine interactions are crucially important to hardware and software development. Connecting us better to the program application and helping us to use a computer more intuitively lies at the heart of the information revolution.

5. Design patterns for human interactions in virtual space are essential for designing social media platforms. Those patterns are abstracted and translated from documented interaction patterns is physical space.

These are only some of the many pattern applications used in information and communications technology. Patterns are helping to run our modern society through massive and continuous information exchange. Aside perhaps from visual and organizational display patterns on the screen, none of these have any relation to biophilia. Interaction patterns are extra-biophilic, but essential nevertheless. Getting back to architecture, all the design patterns that are not directly biophilic are of an
interactive or social type. They contribute on a different level than biophilia, yet act together with the more directly biophilic patterns to define healing environments for human users.

The quality of living structure has its parallel in the “QWAN” of the computer science community. A piece of hardware or software can be judged as possessing these desirable properties: usable, intuitive, friendly, natural, well-thought-out, elegant, graceful, harmonious, adaptable, profound, readable, having long-term value, a joy to use, accommodating without imposing its own “attitude”, a masterpiece, a problem-solver for real people, a tool that blends with the user’s subconscious, etc. And, though I should not have to emphasize this essential point, the above descriptors do not apply to how a computer looks, but how it works. Architects often confuse these two independent aspects of buildings.

D. Formal design sidelines patterns

Several decades of formalistic design have left us in a poor position to make the required comparative judgments. Most of us are woefully out of practice, or never even learned how to do this. Image-based design practices sidelined the use of immediate feelings in architecture, making the quality of living structure irrelevant in a discipline that for the most part evaluates designs exclusively through formal means. We need to bring the quality of living structure back into architecture’s toolbox, to evaluate situations with different degrees of healing potential. We accomplish this using our own direct emotional responses, which have to be reintroduced in today’s practice.

Perhaps — and this is more than a conjecture — early 20th century architects decided to consciously ignore the quality of living structure in the built environment. (They certainly knew about it, because of their feelings, and because all architects during the millennia before them used it as the basis for critical judgment). Introducing arguments that removed feeling as a criterion for evaluating forms, spaces, and surfaces in architecture from then onwards was an effective way of changing the direction the architecture. This step certainly opened the door to an unprecedented vocabulary of non-adaptive forms never built before. It gave design innovation, but at a tremendous emotional price.

Well-intentioned or not, I don’t believe that architects of the past several decades have tackled their responsibility over how they hugely control the emotional lives of other human beings. But a new generation is changing that by becoming more sensitive designers. Younger architects, especially those practicing adaptive and sustainable design, are showing great interest in the topics discussed here. By addressing biophilia, their buildings aim at having a positive effect on the mental and physiological health of the people in and around them.

But because the main champions of architecture in the 20th century didn’t want feelings playing any role in design, we are left with a near total ignorance of these basic matters. The architectural community faces the difficult task of re-educating itself to value healing emotions generated by feedback from adaptive design. The
situation could be compared to a convalescent patient who has to re-learn basic motor skills following a stroke or major surgery. In the present case, decades of architectural education have focused on formal design and have de-emphasized emotional responses. What is surprising is that the public at large accepted this fundamental switch in the way we conceive and structure the built environment.

E. The thrill of power

And how do those architects who don’t practice biophilic design, or search for the quality of living structure, get their emotional satisfaction from design? Design as a profession does give back some pleasure. We have to look for another psychologically-rewarding effect triggered by the act of design. The only candidate I can identify is satisfaction due to power. A designer gets an adrenaline high from shaping the built environment, and enjoys playing with form at will, often without any restrictions. But this is freedom without responsibility: the ultimate license to create without thinking about the consequences. Design expressions that do not also employ pattern constraints could turn out to be oppressive for users.

Paradoxically, the more a design expresses a designer’s personal will, the stronger is the excitement. Top practitioners, in particular, can indulge themselves freely and get rewarded for it. They get intoxicated with the absolute power to shape human lives, by deciding on the shape and dimensions of the spaces in which people will live and work. Nevertheless, the creative freedom permitted in architecture (tightly dictated by trend-setters, power brokers, and influential critics) is far from total. For several decades, architects are taught — or allowed — to create anything except that which has the quality of living structure. This restriction is socialized into architectural education and in the media coverage of architecture.