

The Ethics of Exploiting Sustainability as a Vehicle for a Return to Quality Construction

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The majority of buildings produced today, (developer housing, strip malls, office parks, etc.) have been justifiably lambasted by architects for their low quality of design and construction. Although the aesthetic choice of forms is a part of the criticism, much of the fault can be attributed to the choice of inferior construction materials that most architects find visually and morally offensive due to their low quality and tendency to imitate other materials. Most of these buildings types are constructed with a limited life expectancy, both physical and financial. Therefore material choices are mainly determined on an economical basis where initial costs drive the finances and long-term life of a building is rarely considered. Trying to convince a builder of the advantage, both moral and financial, of higher quality construction is often an exercise in futility. With profits as king and a slew of willing tenants there is little incentive to change the formula. To persuade a builder on moral grounds that better materials may produce culturally better buildings, rarely has any affect unless accompanied by promises of higher profits. Builders usually have no objection to working with higher-grade materials as long as it doesn't lower their margins. In fact many have already learned how spending more money on good design can even boost profits. For example, some New Urbanism communities with better designed houses than those found in traditional suburban developments are in such demand that their houses have sold quicker and at higher prices.¹ A movement like New Urbanism can be the driving market force behind better architecture but its effect can be limited due to its dependence on a clientele with a certain aesthetic appreciation for design. Unfortunately most suburban developer house buyers have few qualms with

the visual appearance of their house as their priorities are elsewhere. They are more concerned with issues such as size, gadgets and the attraction of the 'new'. The general public does however seem to be increasingly concerned with the environmental impact of their home as evident by the latest socially popular and politically correct movement: sustainable/'green' architecture. Like the jump in sales of hybrid automobiles, clients are increasingly requesting and willing to pay (within limits) for a more environmentally friendly building. There could be several reasons for this demand that run from the shallow conceit of boosting a personal or corporate image to a sincere desire to help our struggling planet. Regardless of the initial intentions, the goal is an extremely worthy one and should be supported. A major segment of 'green' building is the choice of environmentally-friendly materials; the definition of which has been debated and will be discussed in detail later. However I have found that many of the higher-rated 'green' materials are also more aesthetically pleasing and longer lasting. The materials that are listed towards the bottom of the sustainable list tend to be less visually pleasing and of shorter life span. This creates an opportunity for architects to 'sell' clients on higher quality materials through the guise of sustainability. So now an ethical question presents itself. Can we exploit the popularity of sustainable architecture to promote the greater use of higher quality building materials; materials that architects find morally superior; if both intentions benefit the community overall?

Morality of Materials

How do we define what constitutes 'moral' construction materials? It can be very subjective but for this paper I will use a set of criteria that *most* architects agree upon: materials that are used in a way that expresses the true nature of their inherent properties and contribute to a high quality level of construction. It is well known that architects of the past have assigned moral attributes to the materials and methods of construction they chose. Selecting high quality materials was not only a practical choice but a moral one as well that was critical to the integrity of the work. If we look at the Arts and Crafts movement in the work and writings of Pugin, Ruskin and Violet-le-Duc and work through Perret, Wright and the rest of the Modern movement, we see a strong application of ethics to the materials of modern architecture.

*Living Architecture is that which faithfully expresses its time. We shall see it in all domains of construction. We shall choose works that, strictly subordinated to their use and realized by the judicious use of material, attain beauty by the disposition and harmonious proportions of the necessary elements of which they are made up.*²

A. Perret

Louis Kahn, through his famous conversation with a brick, extolled the value of respecting and honoring the inherent qualities of the material. He sought to use the materials in a way that was inherent to their nature to give the material, and thereby the building, integrity. The honest use of materials was crucial to the legitimacy of the entire work. But it was not only the honest use of materials that was an ethical choice. It was also seen as unethical to produce shoddy construction as it broke Vitruvius's rule of *firmitas*, to build well. So while a wall built out of EIFS may be morally honest in its expression by saying "I am made out of cheap material and make no attempt to hide it", it still would be considered unethical because it was not built well. While this definition of moral materials is not perfect, it will be used as a basis of discussion in this paper.

The modern masters were clear about the ethical importance of quality construction. Applying moral values to sustainable materials may be a more complex issue than it initially seems. At first glance, it seems obvious that materials that are good for the earth are ethical. Thereby all 'green' materials would be classified as moral. However, even though a wide variety of materials claim to be 'green', there are currently no strict legal guidelines as to what defines a sustainable material. The closest thing to a set of rules or laws, the LEED guidelines, currently allow their criteria to be satisfied in various ways. So a manufacturer can make a claim that their product is environmentally friendly without having to substantially prove it. A product can be viewed as sustainable in several ways. It can save energy in its production, installation or disposal; it can come from renewable resources; it can come from recycled materials, or it can reduce pollution and waste. Within this broad range, practically any material can satisfy at least one of these requirements and be labeled by its manufacturer as 'green'. A few examples: a vinyl siding product can be advertised as 'green' if it comes from recycled material. However the initial material still comes from petrochemicals (a non-renewable resource), many of the chemicals used in its production are toxic on some level, and it can not be cleanly recycled or disposed. Combined with the fact that even its main claim of being recycled may be undermined if the recycled material is not post-consumer waste, it is hard to describe this material as sustainable. Other materials can be made to meet strict sustainable guidelines with just a few, but major, moves. Concrete is a material with great potential because its materials are abundant, it is non-toxic and it can be recycled or disposed of safely. Its major problem is that it is a great polluter of ozone-depleting gas and a high energy consumer through its use of Portland cement. However, this offending ingredient can be replaced with a waste product, fly ash, and flip the material into a friendly and vital construction material.



Figure 1. Mock-up Front View



Figure 2. Mock-up Rear View

The dilemma with trying to choose truly 'green' materials can be seen in a project I gave to a studio of fourth and fifth-year students. Students investigated construction materials used in developer housing to determine the feasibility of using 'greener' building materials. The format for investigation was the construction of a full-size mock-up of a portion of a house using materials that claim to be sustainable. Many of the materials in developer houses are

chosen for economic reasons and are very unfriendly to the environment. Materials such as vinyl siding, rigid insulation and asphalt shingles are derived from petrochemicals and are not recyclable or biodegradable. Products like laminated wood and oriented strand board sheathing and structural joists use toxic formaldehyde wood glues that off-gas into the air. Yet students found switching to materials labeled as sustainable was not so easily done, especially when trying to choose materials feasible for mass production. While the chosen materials appeared to be 'green', there were hidden aspects of each material's production, assembly or disposal that made it less desirable than originally thought; a case of one step forward, one step back. For a material to be truly sustainable it must be so at all levels, a difficult feat as shown below. Concrete board siding was chosen for the exterior finish because it was billed as a 'green' material that does not come from petrochemicals, will not leach toxins into the soil upon its disposal and is a durable, long-lasting material resulting in less landfill waste. However one ingredient in its composition, Portland cement, through its production, is the sixth largest cause of carbon dioxide pollution in the world and a major consumer of coal and oil produced energy. So choosing a material that contributes to ozone depletion and potential global warming was not a completely sustainable decision. Another example is cork flooring. It is praised as a 'green' material because it can replace vinyl flooring and comes from a replenishable source, tree bark. However, much cork is grown on trees far from the construction site. The cork the students chose was harvested from trees in Italy, shipped to Colorado for storage and trucked to a local distributor in the Philadelphia area. So while the material itself has positive qualities, the embodied energy and pollution caused by its transportation devalues its overall effect. While there are materials that are good for the environment on many levels, they are often not well suited to mass production, thereby demonstrating the difficulties with bringing 'green' materials to the scale of developer housing. This is largely due to an economic catch-22 scenario: Certain materials are too expensive because they are not produced in enough quantity and they are not produced in enough quantity because there is not enough demand (because they are too expensive). If we can provide a demand for quality

sustainable materials, we can bring down their costs through mass production. In this way, an increase in the demand for an expensive and very sustainable material like stone could foster its return as a major building material; something that could have a positive effect on the aesthetics of the built and natural environment. The results of the studio project reflect the challenges of making truly progressive steps in the march toward producing buildings that positively affect our environment. Many of the student decisions proved to be lateral moves rather than straight ahead, demonstrating the need to make some major comprehensive changes to the building industry before any real results will be felt.

There are currently initiatives underway to help regulate the problem of rating materials for 'green' capacity including the Building for Environmental and Economic Sustainability (BEES) program which measures the environmental performance of building products by using the life-cycle assessment approach whereby all stages in the life of a product are analyzed: raw material

acquisition, manufacture, transportation, installation, use, and recycling and waste management.³ This approach of looking at the "big picture" for each material helps architects make informed decisions. Until a system like this is firmly put in place it will be hard to decide which products are the most sustainable. However the current ranking systems do provide a reliable starting point from which to begin making comparisons between materials.

Links Between Sustainable and Quality Materials

Using the current ranking systems, we can begin to see some optimistic commonalities between "good" sustainable and quality construction materials. At the top of both lists we see materials like wood, stone, and brick. Not much further down the list are materials that can be made more environmentally friendly with just one or two simple but significant moves. (i.e. fly ash replaces cement in concrete, steel and aluminum come from 100% recycled sources, etc.) At the bottom of the list are the petrochemical-based

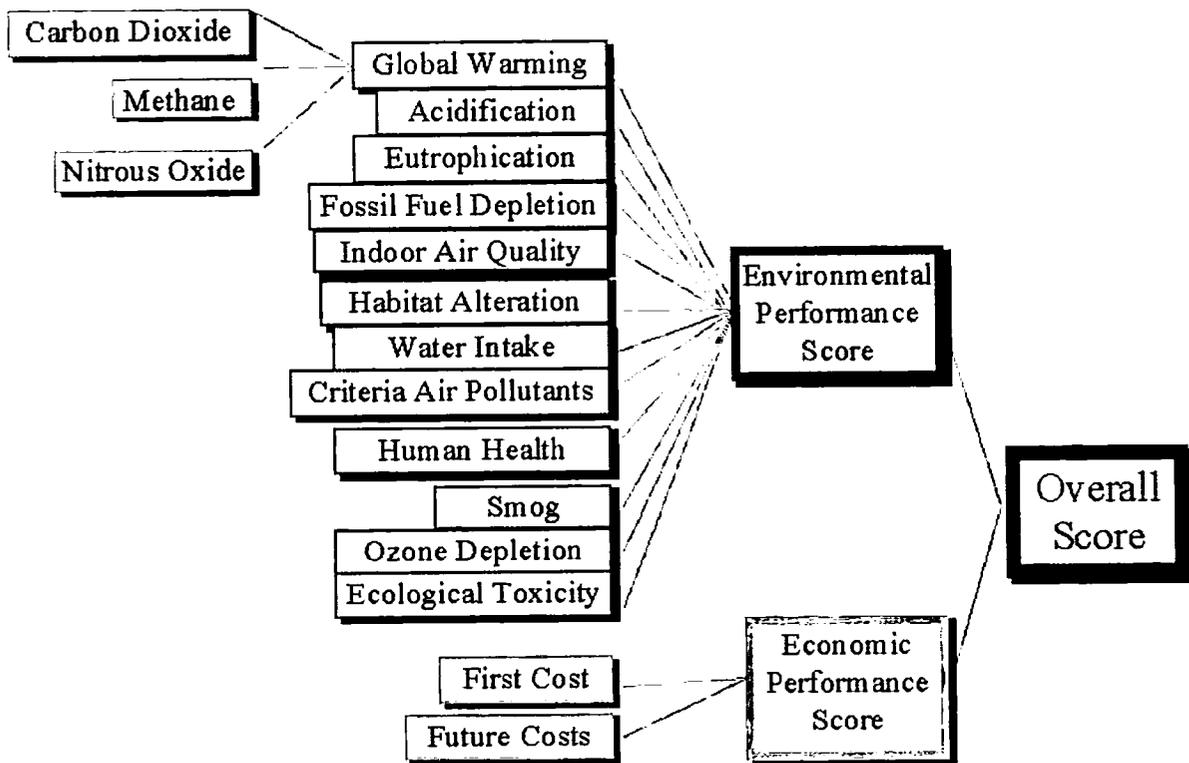


Figure 3. BEES Material Evaluation Chart

products that come from non-renewable sources, use toxic chemicals in production and are not easily recycled or disposed. There is no quick fix for these materials and should be avoided. Coincidentally, these materials like vinyl siding, EIFS and asphalt shingles are also low on the list of quality materials. They are low in durability, weather poorly and sometimes deceptively pretend to be other materials. The two lists seem to relate rather well.

If the better 'green' materials are also the better quality materials, is it acceptable to use the morality associated with sustainable materials as a vehicle to promote the use of quality construction materials? What are the ethics involved with misleading a client (even by omission) to approve quality construction materials by 'selling' them through the promise of sustainability? Architects have often lamented about the general low taste and budgets of clients and have sometimes concealed their real intentions because they thought the client wouldn't approve. They might claim a design decision was made because of building or zoning codes when in reality there might have been other options. The proposed design just happens to meet the code requirements as well as the architect's personal goals at the same time. Little deceits like this walk the line of ethical behavior and vary in degree with each situation. A question asked in any dilemma such as this is: "Do the ends justify the means?" Architects may claim the method by which they reach their intended goal is unimportant as long as the moral goal is achieved. This potentially self-serving approach would allow little ethical room for appropriating sustainability. However in discussing the morality of style, Tom Spector talks about conditions for applying morals to materials and methods of construction.

"If one considers morality to be solely about best actions or proper intentions, then of course it makes sense to dispute whether from a moral standpoint, it makes any difference if bricks are stacked into a pointed arch or rounded arch. These arrangements of bricks are good or bad only to the extent they facilitate good or bad results or reflect good or bad intentions. Short of stacking them so they fall over and kill someone, it is silly to claim that my stack is more moral than

*yours...To impart moral worth to inanimate objects-objects that have neither intentions nor actions-is nonsensical...If however one looks to particular arrangements of bricks for what they further or hinder in the way of community dialogue or artistic traditions, or what they reflect of community values, then these arrangements of inanimate objects no longer appear quite so morally neutral."*⁴

So trying to justify the use of quality construction materials from a solely moral standpoint is hard to do. However, following Spector's line of thought, if we consider sustainable design to be a *community value*, a fairly easy argument to make, then we may feel comfortable justifying the appropriation of 'green' materials in the selection of quality materials as it is for the overall benefit of the community. In this case the ends and the means are both worthy causes to the architect and community. But if quality construction is not seen by the client as having moral value, do we still have the right or responsibility as architects to look out for the good of society? In other words, is proposing sustainable materials as a way to "sell" a client on better construction ethical because it improves the world, both environmentally and aesthetically? Or is our responsibility first and only to the client? There is no clear easy answer as an argument can be made for each side. When considering the exploitation of sustainability as a vehicle for better quality construction, the ethical question may be better stated as: "Do the means justify the ends?"

Notes

¹ Duany, Andres, Plater-Zyberk, Elizabeth and Speck, Jeff; *Suburban Nation; The Rise of Sprawl and the Decline of the American Dream*; North Point Press, New York, 2000

² Curtis, William J.R.; *Modern Architecture Since 1900*; Phaidon Press, London, 1996

³ Building for Environmental and Economic Sustainability (BEES) website <http://www.bfrl.nist.gov/foae/software/bees.html>

⁴ Spector, Tom; *The Ethical Architect; The Dilemma of Contemporary Practice*; Princeton Architectural Press, New York, 2001