A Builder's Take on Green Building

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Building hasn't changed in the past thirty years or more. It begins to appear likely, in response to emerging shifts in energy cost and even availability, that construction will change far more in the coming decades. I believe we've scarcely begun to figure out how to build "green." The following words are one builder's initial attempt to try to structure an attitude, or a position, as much as nuts & bolts, on how to move towards building green.

To give a brief personal background: I came to construction work as a better paying alternative to farm work, which I was raised to. I started out with a house moving company, did painting, wood flooring, concrete formwork, etc. To condense the story, I somehow ended up in college, and after that I somehow ended up becoming a wilderness instructor, first teaching survival, and later, academic courses for the University of California at Santa Cruz. No one has ever pinpointed who is poorer: college students or wilderness instructors. So through those years I also spent a lot of time doing construction work, sometimes for weeks, sometimes a year. During the process I was able to learn some things about being outside, and about the earth, as well as how to build.

Many of the best things I know about how to build successfully, which are of equal importance to the green builder as they were on the decidedly not green mainstream job sites where I learned them, I still remember from that time. I want to name a few of these principles up front. It's important to recognize, from a builder's perspective, that green and mainstream construction have more in common than they have differences. The green builder will want to start from adopting all the principles that lend themselves to excellence in construction, across the board, and go forward from there.

An incomplete list of what strikes me as important, in no particular order:

- The value of an accurate budget appropriate to the needs of the project.
- A well considered and well discussed design objective, prior to the commencement of construction. You could call this “a sense of purpose.”
- Maintaining a clean, safe, and well organized job site.
- Trust and clear communication, within the construction team, and between the construction team and the clients and designers.
- The recognition that fine work is an end in and of itself, building is only a worthwhile pursuit to be involved in if it is done well. It otherwise degrades the materials used, and the workers who handle them.
- And also that excellent work can and should be done quickly. On a construction site, time is money. A skilled crew, proceeding with confidence, will make short work of most tasks, slow down only as required by necessity, and enjoy the process (minor grumbling and a few good things to complain about are part of the enjoyment.)

What was most critical for me in my personal trajectory over to green building came as I found my way into the world of historic restoration, a development which felt at the time like chance. Looking back, I can say that for me, there was a widening fissure between what I was doing on job sites and what I was doing in my work out in the wilderness, where I was developing a long-standing and more or less unfiltered encounter with the earth – with deserts and mountains and forests.

The more I stayed out there the less trees felt like objects. They didn’t seem like wood, they seemed like trees. Even stones – I began to develop a hesitancy about disturbing certain stones. Animal habitat – the specific places specific animals like to walk, sleep, eat – and watercourses, plant niche, all began to seem very close and very real to me.

As those understandings developed, rolling up onto a job site with a track loader to push over the trees and level the hillside blocking the view just didn’t seem the same to

me. I don't know that I ever liked it – I think most people don't, really, but I began to be able to put my finger on why I didn't.

Other things became more clear then too, for instance, that sending an entire 30 yard dumpster full of recyclable cardboard to the landfill after unboxing the windows for each and every house built was probably a bad idea, though it happens on 99.9% of construction sites. This is a form of laziness – because cardboard recycling is free, and the trip to the Recycling Center doesn't cost more than the trash hauling.

So, as I was saying, around the time when I had a growing personal uneasiness with the building I was doing, by chance I found my way into doing historic restoration. Historic restoration means everything from the glorious work of rebuilding, or fashioning anew in the old ways, timber frames and log cabins, gothic revival trim, craftsman interiors, to the less lovable jobs like lead paint abatement, plaster demolition, repairing rotting foundations laid over dank, low crawlspaces. In between are all of the phases involving retro- and up-fitting mechanical systems, plumbing, wiring, windows, cabinets, etc. Remodeling in other words.

Construction changed for me from a good job to something I was inspired by. I believe it was because of the materials I encountered. The old guys, the ones who used to build before, used real wood. Lots of it. They used big rocks, and handmade bricks. All of these were most often obtained from quite near to where they built. The craftsmanship was generally excellent, at least on these structures which have weathered through until now. And the houses were smaller, in general intelligently sited with an eye for landscape, light, and prevailing weather. They had successful relationships with the outdoors, through porches, awnings, stoops, breezeways, and outbuildings. The old builders made the most they could out of the resources they had at hand, didn't include space much beyond the needs of function and found elegant solutions for weaving the elements of the house into the site.

In other words, as you see where I'm taking this, many of the foundations for green building were laid in place right here, hundreds of years ago. For me, this was a revelation that has shaped all that I've thought about building since.

So, the question is, what does the green builder do, apart from what any builder does?

The first thing the green builder does is listen. He listens to the client or architect, to find out what they need, what they expect, what they want, what they can afford.

This is the beginning of a dialogue, in which the builder needs to supply useful, clear information. There's an expanding plethora of products, building systems, and techniques out in the world, some of which are green, and some of which pretend they are green, all with pros and cons. Some the green builder will know from direct experience, or from research, others he can access information about through whatever information network he has developed, and some are to be avoided.

The green build process develops out of this dialogue. We all have to realize that to a certain extent green building holds up the mirror of subjective concern. For the asthmatic, green will certainly include voc- and allergen-free interior atmosphere. The Permaculturist will want smaller, and all local materials. Some can afford the uber-green project that pulls out all the stops, and some will have the budget for only one or two green features. In addition to executing whatever plans are finally concluded, it is the builder's part to assist the client through the maze of materials, processes, compromises, and solutions that will ultimately inform the project.

There are several key elements I want to talk about, and maybe we should get the questions about cost out of the way first: how expensive is green?

The simple reply is that green usually will be a little bit on up to a quite a bit more expensive, depending on what all you do. Of course, you should factor back in that a green house will use less energy, require less maintenance, and have fewer issues such as

mold. Also, everything else being equal, it should at least try to be smaller – which would entail a per/sq. ft. savings that can be applied back into the project.

I also want to say, though, that the “cheaper is better” logic is a troubling one and this is true at all levels of cost, whether you are building low-income housing or mansions. Experience has taught me that cheaper building materials are often toxic, or made by underpaid workers in lousy working conditions, or are simply inferior, not to mention ugly, which counts too.

A few for instances: asphalt roofing shingles, which is the cheapest way to get a roof on your house, after their 15-30 years in the sun will have to be torn off and thrown into the landfill. They can theoretically be recycled, but we don’t presently have that infrastructure.

Oriented strand board (OSB), which is cheaper than plywood, and is the conventionally accepted house-sheathing material. It’s made of little chips of wood glued together with glue that outgases, intensively at first. The wood chips all too often come from trees that were chain logged because they were too small for anything else. Chain logging is when two bulldozers drag a length of chain between them through a young forest, dragging down everything.

Probably, it is better not to have anything to do with anything that came from such a process, at least until the industry completes steps to improve both the glue and the procurement process.

Most carpets would be a third example. They tend to outgas for a long time and release long irritating fibers. I could go on far longer than you want me to with this list. My point is that we tend to start off thinking about cost as if all of the above mentioned materials are rational, normal, and good and everything beyond them is an upgrade. Green building wants to start out with the bar set a little higher. Let’s see what other

things we can give up, or shoe horn, before we get in bed with processes that wreck forests, or come from processing plants you wouldn't want to let your children near.

So green building, square foot to square foot, is going to cost more. It is important to consider. With that understanding, it's also important to say, most of us have to make compromises around green solutions. Maybe you have to use OSB in order to afford your recycled wood floor. There are scores of these sorts of compromises that get worked out in green building. Some fall into the no-brainer category. Some can be quite trying to resolve.

The well informed green builder should be able to help clients come to the decisions and/or compromises they need to make.

A relative of the topic of cost is the question of building materials. Mainstream construction tends to use a few big supply depots for all their needs. There's nothing wrong with this – it's efficient, and the people working in those stores have tons of useful experience and are good at what they do. Their knowledge is a resource in itself.

However, from a green perspective it's favorable to have as broad a repertoire as possible. For instance, there are all sorts of wood products, stone products from slate to soapstone to granite, and materials recyclers, all very local to this area. Some are easy to find, some take a little looking. In my view, local is always better. Best of all if you can use timber or stone or earth off your own site. To do this often means departing from "the straightest line from A to B" approach that building tends to organize itself around.

Another critical contribution the builder can make around materials, beyond knowing where to find the good ones which are off the well trod path, is knowing which commonly used materials are good, less good, and bad, from the perspectives of sustainability, imbedded energy, and toxicity. This means the builder has to put a little extra time, in addition to learning how to use his mainstream materials, into learning what's in his materials, where they came from, and how they were put together, and he

needs to be able to impart what he knows to the client, who will often not even be aware of what questions to ask.

There is some danger for the builder of falling into a narrowly defined palette of options as far as materials or systems he uses, and with which he can encounter any given set of conditions on a site.

For instance, if you are a builder who always uses poured concrete or insulated concrete form foundations, you might fail to recognize a certain site as being far more suitable for pier-built construction. One site may lend itself to a geothermal heating solution where another does not. Even the best green solutions shouldn't be applied universally.

Something I've enjoyed thinking about lately are the archetypes of the Palace and the Hut, if I can use those extremes to characterize the opposite ends of the building spectrum. I don't want to spend all of my time building either one, but it's enormously useful to think about what each entails. The client who wants a palace and the client who wants a hut each have very different needs for the builder to address. This is not always about budget. It will always be about finding materials, and the right process to create an aesthetic which arrives at a healthy structure, appropriate to its site, that fits the archetype the client is pursuing, as well as their budget.

Another of my favorite green building discussions is that of site itself. There's a lot to be said about site that may sound perfectly obvious. We tend, in mainstream construction, to ignore everything that's going on on a piece of property where we're going to build, unless there's a view, or some feature that adds value as we modern humans tend to see value. Cutting out trees, bulldozing all sorts of flora and fauna and habitat often doesn't register on our attention.

Rather than venture to say why that's bad, which could start an argument, let's consider the site as a welcome piece of resistance to the building project. It doesn't want

to be disturbed. Alternatively, it's been disturbed and wants to be rehabilitated in some fashion. In either case, it takes some time, and some clear attention, to discover how to build there. What happens in that time is that relationships form. You get to know the alders growing by that seep a little. How wind and sun move becomes familiar. You notice the smaller plants and the animal patterns. Even a one acre plot has more going on there than anyone could learn in a year of trying.

The friction, if we want to call it that, between what you want and what your site wants, creates a relationship that will make your house more interesting, more grounded, more alive, and more human than it would be if that time and attention were foregone. Surprising elements can emerge. A personal for instance is a stone wall I built near a great crooked oak. I spent a long time trying to get a feel for how to lay it out, and had one false start. It wasn't until after I had the unusual course of the wall laid out that I realized the wall followed the shape of the tree shadow in its layout on the ground. It was in fact the appropriate shape for that wall in that site. This aspect doesn't leap out at you – but it feels right. I like to think that I paid good attention, but it was the tree after all that showed me what needed to happen.

I'll close on the topic of health. This should be considered broadly first: how does one siding manufacturing plant, or paint company, perform with regard to emissions, waste products, etc., as compared with other possible sources for the same or similar material? At a macro level this is a question about the health of the Earth itself: was air, water, or soil harmed by a product's manufacture? How was it transported? How long will it last? Where will it go when it dies?

At a micro level we consider health with regard to building materials as it affects us individually. There is a simply dazzling array of conventionally accepted products available for purchase at any building supply store, which are routinely specified for use in building most contemporary homes, and that are simply poisonous. Glues, paints, sealers and finishes, mastics, underlayment, herbicides, etc.

The green builder will want to install as few of these toxic products as his wits can provide him with alternatives for.

In closing: the green-built house will be informed by the site where it is built. The craftsmanship and materials should dignify the existence of the structure, and the structure in turn will shelter, and contribute to the health and humanity of its inhabitants, over many generations.