

Why Factory-Built Housing Will Succeed – Someday

by Gordon Tully

From the beginning, advocates of factory-built housing promised cheaper, better, and faster housing. None of these goals have been met; a good designer and builder of stick-built homes can match or exceed a similar factory-built product on all these counts. Yet the industry grows and prospers. The reason is simple: Factory-built homes are predictable in their design and construction.

Why Clients Need Predictable Designs

I like to use a diagram (see illustration below) to describe the design process. Each line from the center represents an individual design issue requiring a decision: framing, cladding, paint, electrical service, etc. The distance the line reaches out from the center represents the emphasis placed on that decision, properly weighted, including its cost.

In a perfect design, a perfect circle is formed (at left in the illustration). Everything is considered, nothing is overemphasized. Each decision is brought into balance with all the others.

In the client's world, the circle becomes more like an amoeba (at right in the illustration). Most clients do not know what is involved in the design and construction of a house. Crucial issues such as insulation, structural integrity, and proportions are often scarcely considered, while kitchen cabinets, tile colors, the front door, and the dining room chandelier are emphasized to the point of absurdity.

Unscrupulous builders take advantage of such clients by decorating a poorly built house with fancy cabinets, imported tile, brass light fixtures, and a mahogany front door, then selling it for the same price as a well-built, balanced design.

The best cure for this problem is to educate clients in building matters. With my clients, I try to explain and justify the many decisions that must be balanced to produce a good design. Unfortunately, such education is a luxury many clients can't afford.

Is Factory-Built Housing the Answer?

The advantage of factory-built housing is that it offers clients a complete and balanced package at reasonable prices. With a good housing manufacturer, the client can rest assured that all bases are covered, that the design diagram is almost circular, without needing to become educated about every last detail.

Unfortunately, not all manufacturers provide this. Many factory-built home manufacturers provide only a part of the overall house, and often a small part. The cost of a typical package might be only one-half to one-third of the house's total cost. For example, few if any factory builders construct the foundations, and some do not get involved with interior finishes and trim.

These items are, of course, crucial. The better manufacturers supply the rest of the package by leading the client to a skilled builder experienced with the system, compiling a complete soup-to-nuts estimate, and arranging a fixed-price contract with the client and builder.

Companies that provide only a shell or frame are still performing a service by narrowing the buyer's choices and showing the buyer what the finished product might look like. But the full advantage of factory-built housing is only achieved, in my view, by a company that supplies the buyer with a fully balanced, completely finished product.

As worker skill levels continue to

drop in the home building industry, and as quality materials become harder to obtain, we will have to rely increasingly on the controlled conditions and volume production possible in a factory setting. As this happens, home manufacturers will feel more pressure to take control of the whole process, from foundations to paint, to guarantee a predictable product.

Design Limitations

Perhaps the main drawback to factory-built housing is that its predictability - its greatest asset -- creates undesirable limits. These limits crop up in several key areas.

Structural systems. In the abortive Operation Breakthrough of the 1970s (a government program to encourage prefabricated construction), the results were almost universally disastrous because the building systems provided little or no design flexibility. One got boxes with a box system, panels with a panel system, and erector sets with a stick system. Boxes had to line up; cantilevers were difficult or impossible.

The surviving technologies all use variations on standard wood-frame construction. Some have rediscovered that western platform framing is the most sophisticated and flexible building system ever developed; others stick with the ancient and reliable post-and-beam system. While the structural system is still of technical interest, it is often impossible to tell by looking at a finished house what structural system was used, except for designs with exposed posts and beams.

Dimensional flexibility. A more serious issue is the lack of dimensional flexibility in factory-built housing. For building a house attached to an existing dwelling or to fit a house onto a difficult site, most factory-built systems won't work.

In principle, there is no limit to the dimensional flexibility available to the housing manufacturer. More advanced computerized panel systems and manufacturing processes could allow indefinitely smaller dimensional steps, down to an inch or less. However, most manufacturers presently vary their dimensions in large steps, typically 2 or 4 feet.

As anyone knows who has designed a few houses, changing certain key dimensions can completely transform a plan. Dwellings are a matter of inches (a point often missed by architects used to the freedom of planning larger buildings). Dimensional flexibility makes an infinite number of designs possible. Of course, this also makes the system unpredictable. It may not be possible for a manufacturer to maintain flexibility at the level of inches and at the same time deliver a predictable product.

Detailing. Finally, factory-built housing poses severe limits on the sorts of detailing systems that can be used in design. And it is the detailing that distinguishes the work of a really fine architect or builder. However,

most factory-built housing companies offer a limited range of detailing -- one way to trim a door, build eaves, or turn a corner.

In my opinion, this is the most serious problem with factory-built housing systems. It is very hard to develop a limited set of details that will work with every design in the catalog. You can't do a convincing Queen Anne Revival design with Colonial details.

Lessons for Stick Builders

Unless some clever factory builder figures out how to combine design flexibility with predictability, there will always be a place for designers and builders of one-of-a-kind houses and renovations. Nevertheless, factory building will have a growing impact on how the rest of us do business.

To begin with, finding good builders or designers - or good subs, for that matter - and verifying that they will produce a job on time and on budget is an increasingly difficult task. Factory-builders come with a known reputation and guarantee their performance. Homebuyers and developers will find that an increasingly important advantage in years to come.

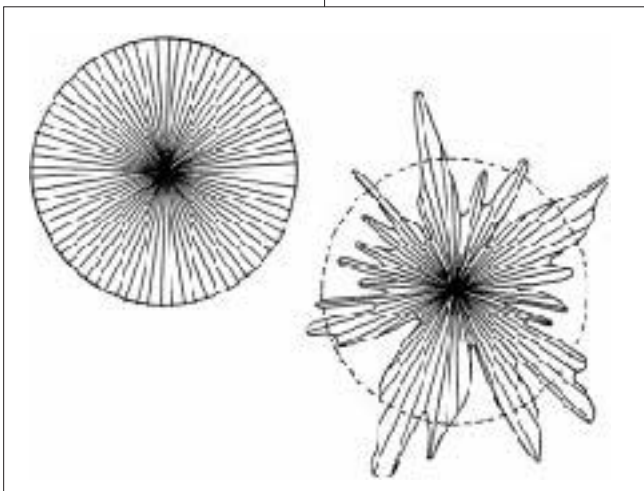
One way small builders and architects can close this gap and make their product more reliable would be to join together in associations that police their members. The resulting reputation for reliability and quality among association members will attract buyers.

Follow-up is another area in which conventional builders could improve. Some Japanese home manufacturers, for instance, provide follow-up maintenance service in which white-coated servicepeople arrive at the door at given intervals after construction with the blessed question, "Is there anything we can fix?" By fixing what went wrong with the last house, the manufacturer not only impresses the customer but quickly learns what not to do again.

Consider how you would feel about revisiting one of your jobs two years after completion and asking the same question. If the idea terrifies you, it's time you sought greater predictability in your product.

The deepest overall lesson to be learned from factory-built housing is that by doing things over and over, you learn how to do them right. As factory builders provide more and more predictable products, consumer expectations will rise. It is up to the designers and builders of unique custom houses to follow suit; the days when customers will allow themselves to be used as guinea pigs are rapidly drawing to a close. ■

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Think of all the aspects of house design -- from insulation to window trim -- as lines within a circle. In a balanced design, each item commands equal attention (represented by the circle at top above). However, many new homes give too much attention to some items, such as the color of the bathroom fixtures, and not enough to others, such as the level of insulation. This yields an unbalanced design (like the amoeba, at bottom). Good manufactured housing can provide balanced design, since every aspect of the house is thought through at the factory.