

25

Return to regionalism in building design

Shortly after the turn of the century, Henry Ford revolutionized the automobile industry when he developed the concept and methodology for manufacturing automobiles on a mass production basis. Students of business management recognize Ford's concept not only as the cornerstone of the automobile industry, but also as one that spurred the entire industrial-economic revolution of the twentieth century. The concept of producing large quantities of identical products is the bulwark of our industrial society.

When this concept is related to the building industry, some analogies can readily be drawn that relate to the departure from regional dictates. If the auto industry had been guided by the dictate to design and build different types of vehicles for, say, 20 different climatic areas of the country (not to mention the global market), it is likely that mass production cost advantages would have been much less conducive to two cars in every garage.

As technology in the building industry progressed, the trend followed those in the automotive and appliance industries; i.e., to develop singular concept products for the universal market. This was the beginning of the end of regionally oriented building design.

There has been some limited success in the area of prefabricated or industrially produced buildings. These, although the ultimate in the concept, are not the target of this chapter, however. We address ourselves here to the mass produced systems, subsystems, and concepts such as building curtain walls, massive fenestration skin systems, insulating materials, structural systems, structural components, modular concepts, and prepackaged mechanical systems.

The intent is not to criticize mass production efforts in the building industry. Without challenge, this approach has been the primary force in the United States building industry over the past quarter century. In retrospect, however, the ingenuity of industrial designers, production engineers, and marketing organizations, considered in light of the products that have resulted, would not have been possible had not energy resources been readily available at relatively low costs.

Mass produced, mass marketed systems are best identified by fads in construction materials, construction systems, and energy systems. Examples of such fads are:

- Totally fenestrated building skins.
- Modular interior design.
- High-velocity air distribution systems.
- Roof-mounted mechanical systems.

None of these concepts, or the resultant products, can be considered as inferior, but unfortunately, the concept of universality causes extensive misapplication of such mass produced systems. The misapplication, in turn, often results in an overreaction that causes the misapplied system to be replaced universally by another, and so the cycle continues.

The concept of universality in the building industry, essentially ignoring regional variations in climate and energy resources, must be reconsidered if we are to cope with the problem of limited, costly energy resources. The immediate evidence is that our industrial/technological community is heading off on continued fadism, i.e., developing and promoting new universal systems that will solve the

problem. Unfortunately, this approach will fail, or succeed only at the expense of creating other problems that will open the way for still other universal solutions.

If we are to continue our leadership in building technology in an energy conscious and resource limited market, we must recognize the regional nature of building design. We must seek out the climatic areas in which certain building materials or energy source and conversion systems are most applicable and then market them for those areas only. This will be a whole new concept compared to our past method of doing business.

Consider all parameters

Designers must consider all the parameters of each building as a unique entity and overcome the temptation of repetitious design. For every building, the building design and energy systems design must be subjected to an iterative analysis until the design is energy and cost optimized. These studies must include not

only the local climate but also the building orientation, shape, fenestration and wall systems, occupancy schedule, mechanical system and illumination systems, and owning costs. A major implication of this concept is that the building design team must take an even more responsible role, not only in functioning as an integrated team but also in the overall project conception.

This will not be easy. When building owners and developers tend to dictate to the design team certain emphasis on first costs, the designers must be prepared to inform their clients fully regarding the energy and maintenance cost impacts of these possibly unfounded dictates. As a result, all will benefit.

ASHRAE Standard 90-75 touches on the regional aspects of buildings in Section 4. This is a healthy beginning. But the regional nature of buildings and their unique occupancy functions and schedules must be recognized as an industry philosophy if the energy question is to be addressed successfully.