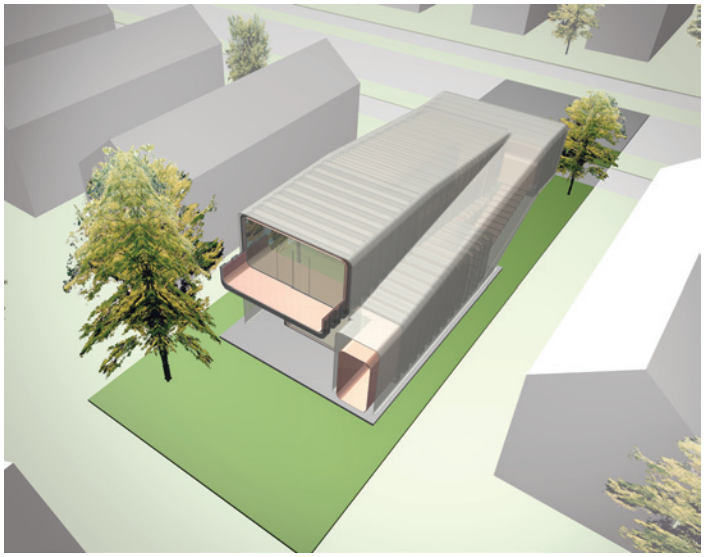

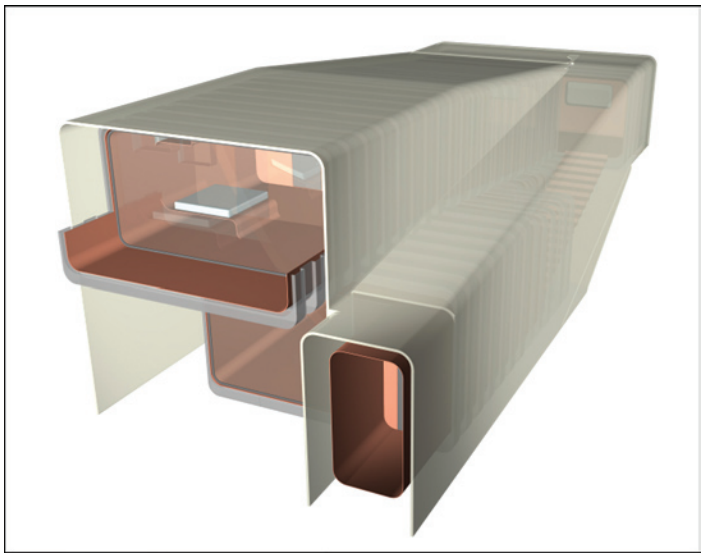

housemc

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Mass-Crafting
Numerical instructions for construction

Craft oriented culture was eventually displaced by mass-production, and it was not until the early 1990's when a new paradigm began to emerge, one of infinite customer driven flexibility. Mass customization promises a flexible and efficient mode of production for customized parts or services at low cost. The catalyst for such a revolution has been computer-aided design and computer controlled manufacturing.

This new mode of production is typified in the US Department of Defense's Joint Strike Fighter program, which in 1996 awarded both Lockheed-Martin and Boeing contracts. The JSF program began with a logical but radical proposition: instead of creating three different airplanes for three different users, one design approach would be used to build a single family of aircraft that could achieve economies of scale in production and support. The three users in this case were to be the Navy, Air Force, and Marines. The family of aircraft designed shared 90% of the same parts, yet their performance remained incredibly varied. Both Lockheed-Martin and Boeing satisfied the requirements of their contracts because of their efforts in research, computation, and advanced manufacturing techniques. The Joint Strike Fighter is first top-of-the-line fighter to be virtually designed, built, and flown before a single piece of metal was cut.3

Such innovations in manufacturing have always influenced the making of buildings. The materials that are available, the methods of erection, and the pool of people constructing buildings evolve based on the paradigmatic shifts in the culture of making. These issues consequently influence every aspect of building, from the interaction permitted between designer and fabricator to the format of instructions and specifications issued for the purpose of making.

Although mass-customization is feasible for manufacturing (typically at small dimensional scales) it is still not fully available for the construction of buildings. Computer driven manufacturing has affected high-end buildings, making difficult things possible, but the promise of high variability for low cost is still not affordable. And in the end, architect designed buildings are typically custom made, based on a clients needs and desires. Architects provide high variability for medium range cost within the current model of making without all the CNC manufacturing. A model that emerged from the work of the Wallenberg studio was that of "mass-crafting" which employs strategies of the three production models mentioned (craftspeople, mass-production, and mass-customization). In the mass-crafting model the design process exploits computation to develop a parameter based procedural model allowing for a repetitive fabrication process that not only allows for variation but also seeks to create it.

(see p. 433)...