

# Building from the Idea Out

Buildings designed according to their jobs may revolutionize the construction industry.

When the sprawling federal government wants another building so that it can sprawl even further, it meticulously makes up its mind about every detail from door sizes to lighting wattages before breathing a word. Contractors then bid for the right to construct a custom-tailored building, and since the government is the client, the tailoring is conservative to say the least.

**There is, however,** at least one high-ranking upstart who would like nothing better than to change all that, and to change the way building designers think about buildings in the first place.

John Eberhard, director of the Institute of Applied Technology, the "real world" division of the National Bureau of Standards, believes that buildings should be built the way airplanes and spacecraft are today—in whatever way will best do the job, rather than to fit a preconceived notion.

Eberhard's Institute has already made a year-long study for the Defense Department to show that military buildings such as barracks, laboratories and hospitals could be described by what they are supposed to do, rather than by physical measurements. He wants the designers to innovate—adapt what they need from the most advanced technology in materials and equipment—and design a "system" to fill the need.

A hospital, for example, would become the best possible integrated system for patient care, meal selection, emergency service routing, access to equipment, rapid diagnostic testing and a lot of other factors.

**The DOD project,** however, has never gone beyond the study stage. Unfortunately, Eberhard said, the pressures of Vietnam and "the reluctance of DOD construction people to experiment" have stopped the plan in its tracks, though it remains "a possibility in the background." A similar study now being done for the General Services Administration, which plans the government's office buildings, is generating "considerable enthusiasm," Eberhard said.

The federal government is just about the toughest customer Eberhard could have for his idea. Almost everything it buys, down to the smallest paper clip, is procured through the bidding system, with competing merchants trying to offer the tastiest possible package without pricing themselves out of the market. The problem is that in using a

"functional specification" system to encourage manufacturers to come up with their own innovations, the government must be able to say no if it does not get what it wants. Since bids are presently made with a tight profit margin on the basis of known building methods, some businessmen might hesitate to risk a fat contract on the hope that the government would like their ideas.

This way of buying things is "conservative," says Eberhard with some restraint, but even in the government "the model exists" for building to function rather than form. All military aircraft, for example, are selected from a number of companies submitting their ideas of how best to meet certain performance "specs": speed, armament, navigating ability, etc. If jet fighters were built like government office buildings, all the companies would have to offer their prices for building a plane of predetermined design, regardless of what innovations and ideas might improve it.

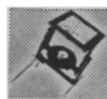
**Newest entry** in the form-follows-function derby is the U.S. Navy, which for the first time in history is planning a series of ships to be built by the "contract definition" system. This is the perfect embodiment of Eberhard's idea. Instead of accepting cost bids on a set design for its Fast Deployment Logistic ship system, the Navy will ask for designs that can fill the bill for the FDL's capabilities.

The capabilities are many, including a controlled-humidity atmosphere, the ability to store heavy vehicles such as jeeps and tanks for long periods of time and amphibious landing gear. In fact, just figuring out what to ask for in the specifications is such a job that three large corporations, which began the task on July 29, will be lucky to finish the definitions alone by the end of January.

The advantages to the system in shipbuilding are numerous, says the Navy, and include lower cost and increased standardization. Most important, however, will be getting industry's voice and imagination in ship design, which at present is one of the most backward areas of U.S. technology.

The Institute of Applied Technology will complete its GSA study in June. Though office buildings may not become radically different as a result, the overall implications of the idea could change the entire building industry.

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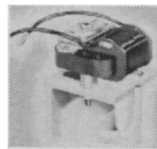
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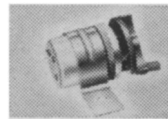
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