

Rex Beasley

'Fluid Architecture'

"Environmental designer." "Architectural engineer." "Tireless inventor." Rex Beasley is all of these, sometimes treating them as separate callings but more often merging his talents in pursuit of designs for the home and office that are a step ahead of traditional responses. Beasley's goal is to transform not only the use of space but the perception of how space "should" behave. His interest is creating architecture that doesn't just "sit there and look pretty," he says, but, instead, actively does more and functions well on several levels.

"Traditional architecture is static architecture," Beasley insists. "No matter how big or expensive the home, conventional architecture limits what the home can accomplish." Typically, he notes, today's upscale residence has many different rooms, each with a different purpose. "Why not let one room behave as three rooms, act larger than its given square footage?" he asks.



A strong believer in getting more from less, in being efficient with money and materials and responsive to the environment, he further asks, "Instead of adding space to a structure, why not increase its functionality, let an existing space perform as many spaces? If we have the technology to do it, why not have a living room, bedroom or home office leave the house and go out into the garden? Why not have the home entertainment center swing from the great room to the master bedroom at the push of a button?"

To this end, Beasley's firm, FutureSpace, Corp. (www.fs-c.com) of Venice, Calif., has developed design processes, known as Fluid Architecture®, whereby large architectural elements – walls, rooms, even portions of buildings – are engineered to move smoothly into new configurations through the integration of technology, mechanical systems, and his patented products. The result is a kind of reconfigurable architecture intended to be highly functional, flexible, and cost-effective, and



INDOOR-OUTDOOR FLUID ARCHITECTURE MODULE FROM FUTURESPEACE CORPORATION

spaces that are experiential and lively rather than static.

At the core of fluid architecture are three movable systems, all of which operate electrically and manually, with some aspects of their movements triggered by electronic sensors. The 007 Wall is a rotating wall segment, typically eight feet wide, that both separates and connects two rooms. As it pivots 180 degrees on a turnstyle base, it offers one of two "faces" to a room – perhaps the home theater on one side, a fireplace or wet bar on the other. The wall may also be left in a 90-degree open position to create a passageway between rooms and connect spaces visually.

The 008 Room quite literally allows architecture to change shape in moments. This design uses a linear rail system to move a room such as a bedroom or home office on tracks to an outdoor location, extending living space while providing temporary usable interior space in the portion "left behind." Like the sunroof of a car, a push of a button takes the room from a normal closed position to a mid-way point or extends it fully into

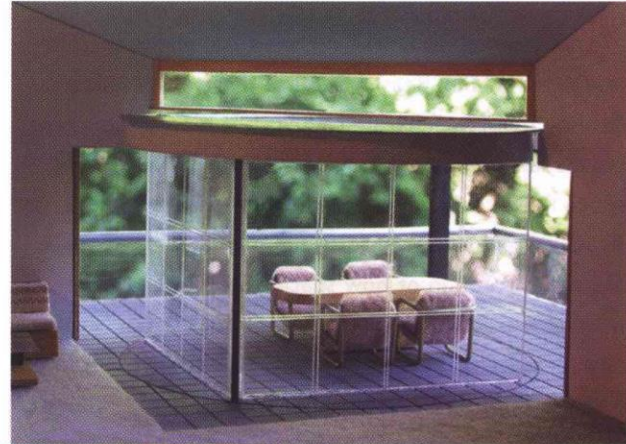
the outdoor environment.

Another design, the Fluid Architecture Module (see photos), utilizes a circular platform, a lazy Susan of sorts, 20 or 24 feet in diameter, to rotate an open-plan living space such as a great room to take better advantage of indoor conveniences and outdoor connections. A dining area, for instance, can be set up with a meal near the kitchen, then be rotated to swing out to the terrace for open-air dining; if the weather becomes too warm or too breezy, a button on the wall or a remote control repositions the module away from the discomfort or takes it back into the interior space.

Beasley agrees that his gliding rooms and rotating modules make the most sense in milder climates where the indoor-outdoor lifestyle can occur nearly year-round. But as an environmental designer and advocate of passive and active solar solutions to home design, he is convinced that his structures and processes merit consideration on a broader level. "These processes create a higher quality of life, a stronger connection to nature," he says, "and by being fluid/dynamic take further advantage of natural energies such as cooling breezes and solar energy."

ENGINEERING CONCEPTS

Beasley's interest in solar and alternative solutions took shape soon after graduation from Virginia Tech when he worked as an engineer for United Technologies designing jet engine components. Later, an interest in architecture led him to postgraduate work in interior



design and industrial design at UCLA and elsewhere. "My first house design was all about getting more from less, about being efficient with space and in tune with the environment," he recalls.

"It had a tennis court on its roof, a dining room on a rail that went outdoors, and a big window that slid completely aside. Everyone was intrigued,

but I decided that it was too complex and too dangerous to build, and very expensive." Beasley spent the next ten years simplifying his concepts, concentrating on products and designs that were inventive but "safe, smooth-operating, and did more than one thing for the money."

Admitting that it was a tough road to get from the complex to the simple, Beasley says, "I had to learn to design high-tolerance spaces for a low-tolerance world. Builders can be sloppy and the average construction guy



enviro-design



doesn't know about working with rail or circular systems." He credits the computer with being one of his most vital tools in creating the necessary high-tolerance systems, sensors, and mechanisms for his installations.

In the design of a gliding bedroom for a remodel of a small house in the mountains north of Los Angeles (see photos), Beasley combined several techniques to integrate safe, smooth operation with functional architecture. Powered by a finely tuned, low-energy motor, the 15 by 16-foot room leaves the confines of the house on steel tracks that are maintenance- and rust-free. When fully extended, the overall space offers an indoor-outdoor area measuring 15 by 42 feet.

"We used a 1/4-horsepower motor as this was an experimental design and we wanted excess power — just in case," he says. "But we could easily have used an 1/8-horsepower motor instead." The design also employs several sensors to detect moisture, movement, or lack of activity, allowing the room to retreat, for instance, if it starts to rain or stall if a pet runs in front of the moving wall. In addition, there is a mechanism to

disengage the automatic systems in a power outage so the room can be physically pushed back into the main house. (The 007 Wall, installed elsewhere in the home, is finely balanced on its turnstyle base and can also be turned by hand if necessary.)

As the house resides in earthquake country, the gliding structure is securely hooked to the ground with Beasley's patented system for tying down moving building segments. "I was more concerned in this case with the very strong winds that blow through the canyons," he says. "If there were an earthquake that moved the room off the correct location, we'd just move it back. With a wind, however, it could conceivably turn over if not properly hooked down." Beasley also created a custom sealing system for roof and walls to ensure a perfectly tight fit when the room rests in "normal" mode. "but I used mostly off-the-shelf components," he adds.

The dynamics of fluid architecture and its inventiveness are in part what attracted Beasley's client — a marketing executive and self-described adventurer — to integrating both the 008 Room concept and the 007 Wall



into his home. The opportunity to optimize the panoramic view, experience the indoor-outdoor exchange, and increase the overall function of his home were also motivators. This particular bedroom took three months to design and build, at a cost of \$65,000. (A smaller 12 by 14-foot version would start at about \$45,000.) The rotating 8-foot wall segment dividing the bedroom from the living area cost about \$15,000, excluding the home entertainment center.

FLEXIBLE EFFICIENCY

During the past decade Beasley has also been designing and implementing functional reconfigurable architecture for the business environment. Having observed that traditional office remodels and "updates" often take months to accomplish, and can be outdated before workers return to their desks, he proposes creating the "office of the moment" – state-of-the-art business environments that can be built in weeks rather than months using an "assembly construction" process and readily available products.

The floor system, for example, contains all the necessary technology and utilities: electrical, data, telephone, fixture sources for ambient and task lighting, sometimes HVAC. Free-standing desks, modular work stations, and movable walls and partitions allow the interior to be reconfigured quickly, and should the office change locations, the effort and cost to reassemble is minimal.

"I think the time savings is what makes this process a 'go' for corporate America," he remarks. "The new world is about being light on one's feet, making things happen quickly – hopefully with less waste."

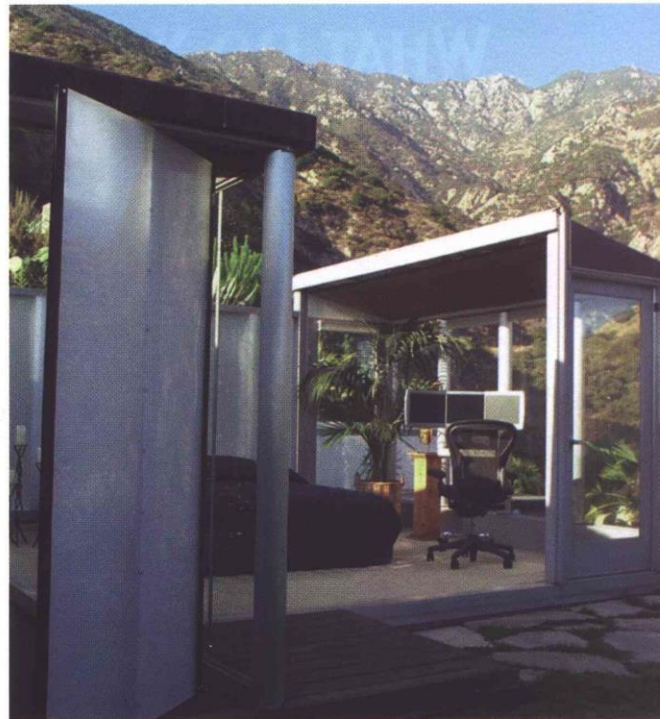
Beasley is taking his experiences with the reusable office interior and fluid architecture into his new home, now in the design stages. The house will have a "smart" floor, with most of the service utilities, including HVAC, located in the floor system. "All lighting will be bounced lighting or task lighting emanating from elements located on the floor that can be moved around," he says.

"One of the big absurdities in office lighting – and in homes – is that so much lighting comes from fixtures in the ceiling that cannot be relocated and often create

harsh light and waste electricity. There are many design solutions, for example, in which the fixtures are part of the furnishings themselves."

Walls will be movable so that spaces can be reconfigured, depending on needs over time, and fluid architecture products will allow quick configuration on a day-to-day basis. His design also allows key sections of the house, such as a 008 Room (linear or circular) or a 007 Wall, to be disassembled and replaced with new components – or even moved to another location.

In his calling as an environmental and "evolutionary" designer, Beasley is currently building a house in the southern California desert which will be energy inde-



pendent as well as contain elements of fluid architecture. During the day, a solar-activated pump forces water from a pond at the base of the property to another at the top. When electricity is needed, water is released from the upper pond to travel through a hydrogenerator, which in turn produces electricity.

"The water first goes through the house, creating a babbling brook, before going through the water turbine," he notes. "I like this metaphor – running water in the desert – and the fact that we are creating

electricity when we need it, with no waste of fossil fuels.”

The desert house falls into a class of structures Beasley calls “sail structures,” which he considers yet another group of fluid architecture formulas. “These structures have large surfaces, like sails, that turn to the sun to gather energy, funnel wind to increase wind turbine collection, shade the house from the sun when necessary and reflect sun to a focal point to create very high energy-producing capabilities,” he explains. “I believe these structures can be energy independent in most of the world – largely because they reshape.”

Beasley’s mission to change the face of architecture has gathered converts among interior designers and within real estate circles. He has established long-term consulting relationships with a major international real estate firm and a well-known office furnishings manufacturer. And the media has shown interest as well, with articles in publications such as the Los Angeles Times and television coverage by NBC, Bravo, and the Discovery Channel. He has found the architectural

community less supportive, however.

“Fluid architecture products require a lot of shifting and stretching in the ways people think – perhaps even more for the designers of architecture than for the users,” he observes. “It’s after the second or third exposure that people move from fascination to action and begin to think about incorporating the concept. They say, ‘It’s so simple. Why hasn’t anyone done it before?’”

“Interior designers have been extremely receptive to my products because, I believe, they ‘think from the inside out’ and focus on the inhabitant and creating a lifestyle appropriate to his or her needs. In my view, static architecture leads to a static ambience, which in turn leads to a static state of mind.

“Fluid architecture is responsive to people and to their connection with the environment. It is also responsible architecture that uses existing space wisely and creatively.”

CHRISTINA NELSON IS A REGULAR CONTRIBUTOR TO *ARCHI-TECH RESIDENTIAL* AND *ARCHI-TECH* WHO LIVES IN NAPA VALLEY, CALIF.

