

T E C H N I O N

Israel Institute of Technology

-FOCUS

101
one up.

21C Hospital Design

By **Shlomo Maital**

Everything on this planet not provided by Nature (like trees, carrots, and apples) is designed by someone. In the case of hospitals, good design can be the difference, literally, between life and death, or between controlled costs and runaway budgets.

This was the theme of the first international conference on the design of the 21st century hospital held at Technion in October 2012. Billed as a “gripping interaction between architects, designers, medical practitioners, Academe, and decision-makers,” the conference was co-organized by Prof. Noemi Bitterman, who chairs Technion’s industrial design program, and by the deans of the Faculty of Architecture and Town Planning and the Rappaport Faculty of Medicine: Profs. Yehuda Kalay and Eliezer Shalev.

In her opening talk, Bitterman noted the gap between the English word “hospital” (related to hospitality, implying warmth, friendship, and welcome) and the Hebrew “beit holim” (house of the sick). We must close that gap, she said. The main achievement of the conference, she told me later, was the productive dialogue between those who design hospitals and those who work in them daily.

Two key issues trouble hospitals in Israel, the U.S., and elsewhere. First, mistakes that cause patients injury or death. A World Health

Organization study showed that one person in 10 is “subjected to a human error in his or her treatment and almost 1 patient in every 300 dies because of it.” Second, soaring costs. New medical technologies in hospitals are astonishing – and astonishingly costly. Last June, the Supreme Court blasted the Finance Ministry for “emptying of meaning the right to

“The 21st century hospital will feature creative functional design that replaces bucks with brains.”

health care (in the National Health Care Law)” by underpaying Israel’s four HMO’s for hospital days. The Finance Ministry says it will continue to cut the per diem, to induce efficiency improvements. That bodes ill for the sick.

Prof. Shlomo Mor-Yosef, head of the National Insurance Institute, noted that it takes six years to design and build a hospital, which then stands unchanged for 40 years. So by definition, hospitals are obsolete the moment they open.

Dr Kobi Vortman, Technion alumnus and CEO of InSightec Ltd., brought some striking data. The U.S. spends about 18 percent of its GDP on health care, compared with 8 percent for

Israel, yet Israel’s life expectancy at birth is 81.5 years compared to America’s 78.4.

Jos Stuyfzand, a Dutch designer specializing in ‘ambient experience’ for Philips Healthcare, described a remarkable experiment in which Philips designed a special CT scan suite in a Chicago children’s hospital. CT scans are

frightening for children. By simply making the suite friendlier, less threatening, and more reassuring, the average time for a scan was

slashed from over four hours to half an hour, and sedation declined by 28 percent. I think this will work for adults, too. It is not only kids who are scared by CT machines.

Prof. Paul Barach, now at Norway’s University of Stavanger, showed how clever design alone can solve problems. Amsterdam’s busy Schiphol Airport once had a problem with its men’s urinals. Men were missing the target, causing germs, odors, and costly cleanup. The design solution? Paint a fly on the center of the urinal bowl. Men love to aim and hit targets. Those painted flies are now ubiquitous worldwide.

Britt Sadler, a former CEO of a large U.S. children’s hospital, says in an article that



InSightec’s sophisticated, noninvasive “Operating Room of the Future” deploys focused MR-guided ultrasound surgery to remove tumors; a rare technology that saves money rather than squanders it.

“atriums [interior courtyards] win architecture awards but don’t save lives.” For years, my Technion office was in a beautiful building with an atrium. That ‘hole in the middle’ kept me from easily interacting with my colleagues, because getting to them took a long hike. Beautiful architecture, bad functional design.

Worldwide, the global economic crisis has caused governments to slash their budgets. As a result, hospitals have stopped modernizing and upgrading. But much can still be done to prevent error-induced deaths and to control soaring costs. The 21st century hospital will feature creative functional design that replaces bucks with brains.

Thomas Heatherwick, the designer who created the incredible London Olympics cauldron of light, has said he would love to work with hospitals, because “some of the worst environments in Britain are health environments.” And in Israel, too, he might have added.

*Prof. Emeritus **Shlomo Maital** is senior research fellow, **S. Neaman Institute**, Technion. This article is adapted from his Marketplace column, Jerusalem Report, October 16, 2012. He is co-author with **Prof. Amnon Frenkel** of the recently published *Technion Nation: Technion’s Contribution to Israel and the World*.*