

EXTREME INTERIORS

How science can create the perfect space inside your yacht.

Words - Louis Postel

How do we define what's most beautiful about a yacht interior?

A beautiful space is a space we always want to return to, argues developmental psychologist Howard Gardner of Harvard University. The trouble with such a definition, he adds, is that the only spaces universally acknowledged as beautiful are many years old:

La Alhambra, The Pantheon, Chartres Cathedral, for instance.

Today, superyacht designers are among the very few designers worldwide held to such high standards. Performance requirements are increasing exponentially, for speed, safety, sustainability, versatility – and for a beautiful space one always wants to return to. With a few strokes of a felt pen on a dinner napkin, a yacht designer draws on vast amounts of information and intuition to capture almost every yearning of the spirit, mind and body in a simple layout.

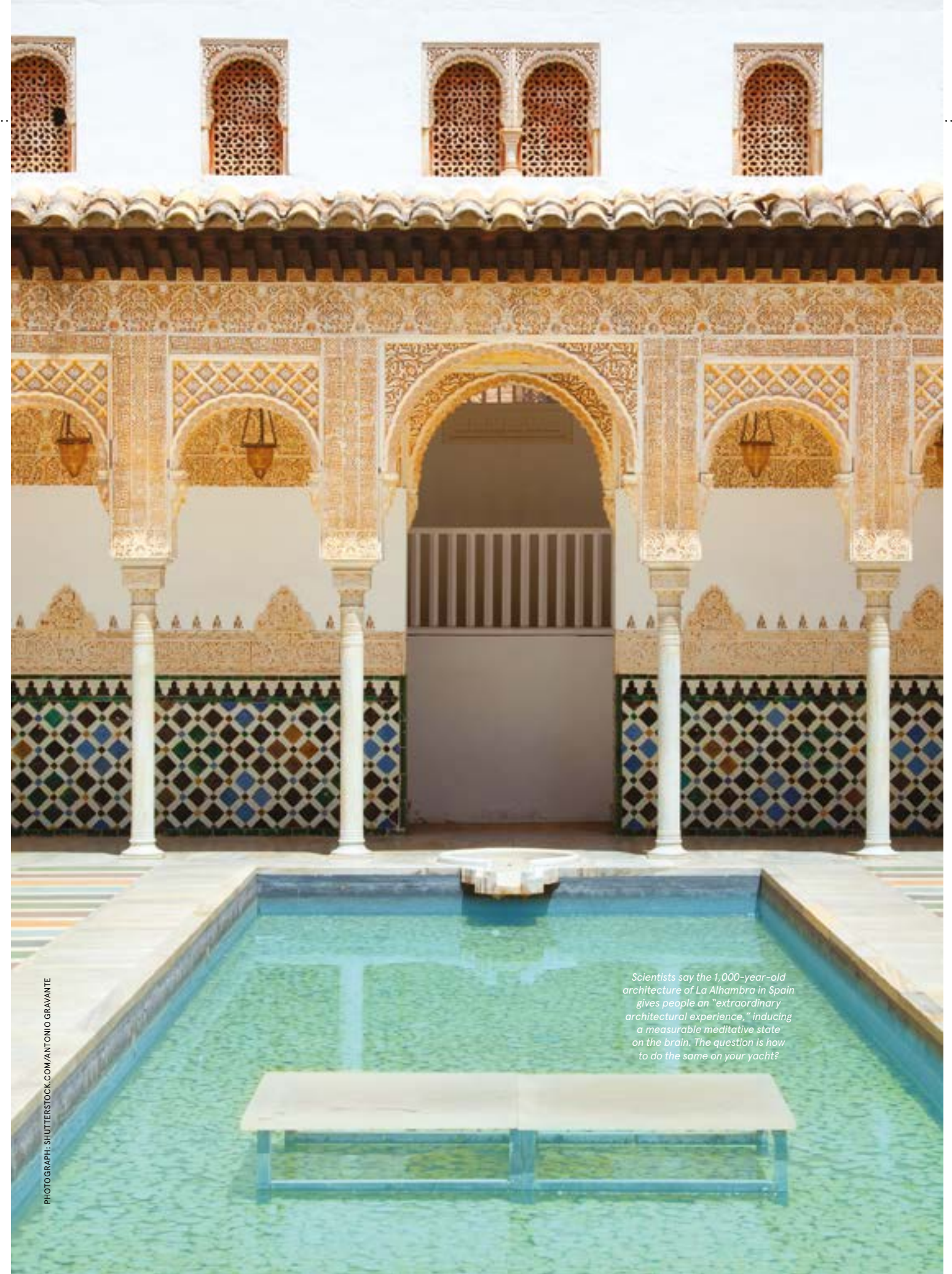
We said almost every.

But perhaps not *all*. And in terms of modern performance standards, missing five percent of positive response can be huge. *All* is a requirement beyond any single human to fulfill. Creating the awe-inspiring beauty on the level of Chartres or La Alhambra requires collaboration. And this is where the emerging science of evidence-based, neuro-design and architecture comes in, shedding light on a host of complex questions relating to the brain's response to space.

Dr. Julio Bermudez of The Catholic University of America in Washington, D.C., led a study using fMRI – functional magnetic resonance imaging – to capture the effects of just such “extraordinary architectural experiences,” or EAEs. With these brain scans, Bermudez and his colleagues have shown that encounters with such EAEs as Chartres or La Alhambra creates what he calls architecturally induced meditative states.

COGNITIVE NEUROSCIENCE

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Scientists say the 1,000-year-old architecture of La Alhambra in Spain gives people an “extraordinary architectural experience,” inducing a measurable meditative state on the brain. The question is how to do the same on your yacht?

ENVIRONMENTAL PSYCHOLOGY

“Evolutionary psychologists were able to prove that males differ from females regarding how much space and privacy they need.”

In other words, maybe you don't have to learn to meditate, just find yourself an EAE salon and let its majestic forms do all the work.

But now consider, en route to said salon, this question: What's easier on the brain — curved bulkheads or angled ones? “Well,” you could say, “I don't need an fMRI to tell me that. Vessels as opposed to land structures are all about curves cutting through water.”

While feng shui masters warned emperors about “poison arrows” shot from sharp angles long before Frank Lloyd Wright banished right angles at the Guggenheim, science remains skeptical. So we asked neuroscientist Michael O'Boyle of Texas Tech University in Lubbock, Texas, for his take. A presenter at the Academy of Neuroscience for Architecture, O'Boyle just completed an immersion study of people walking through virtual curved and angled spaces. His task was to measure the ensuing neuron response in his subjects' amygdalae, their brains' fight-or-flight centers.

“Indeed,” said O'Boyle, “anxiety increases when people encounter sharp things. They think, ‘Sharp things may not be good for my survival.’”

“But here's the thing we found,” he continues. “You have to balance the aesthetics of curved forms with the need for way-finding and this is where what we call angular familiarity is so important. For example, on the bridge, or galley, when you need to find things fast, the route to the lifeboats, exits and entrances. If you can't find your way, your anxiety goes up, as well.”

Another source of anxiety on even the largest megayacht is ceiling height. It's hard to experience the wow effects of EAE when you feel cramped in a lower deck cabin. Again, we turned to O'Boyle, who, with colleague Debajyoti Pati, who holds a PhD in architecture, has been testing a virtual skylight called a Luminous SkyCeiling. Originally designed as a “portal to nature” to calm patients in severely cramped spaces like hospital rooms, or undergoing claustrophobia-inducing actual MRI testing, it is now commercially available.

“We mounted these two-by-six-foot sky-layered compositions over patients' beds to see if they created a relaxation response, leading to a faster recovery. Indeed, they appear to activate parts of the brain associated with depth perception — the cerebellum — creating a sense of imagined movement in beneficial ways that other images did not,” said O'Boyle. “Pictures of puppies, for example, had almost no measurable effect.”

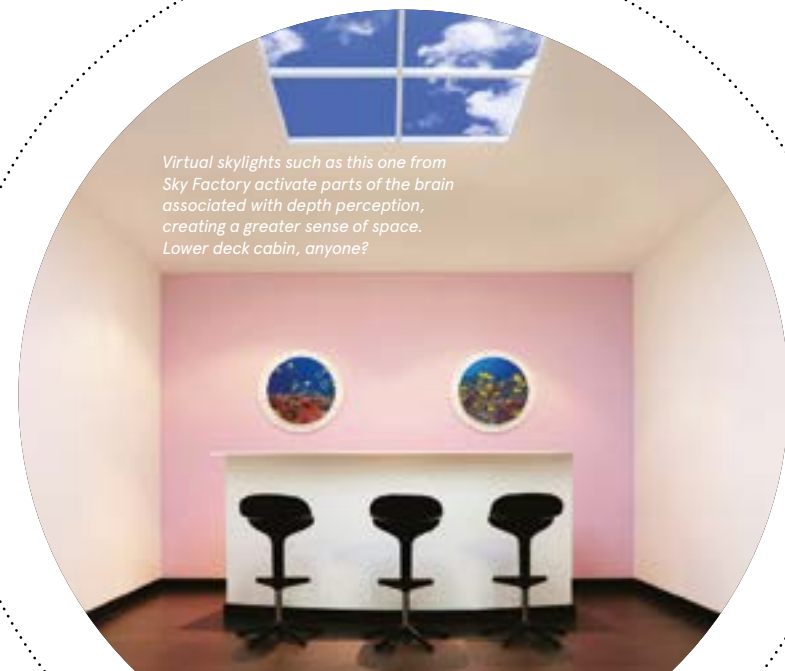
Now let's say you're leaving your relatively cramped stateroom completely refreshed by the SkyCeiling image “High Altitude Cirrus.” *But where's breakfast?* Unfortunately, there are no neon signs pointing to it. What other clues help the brain find its way to breakfast? Enter the inner GPS.

Scientists John O'Keefe, May-Britt Moser and her husband, Edvard Moser, won the Nobel Prize last year for discovering what looks to be our brain's “inner GPS.” O'Keefe's work with rats back in 1971 established what O'Keefe named “place cells” — nerve cells that become activated each time a rat passes a certain location. When this happens the rat creates a mental map for navigation.

Later, the Mosers added something called “grid cells” to our design vocabulary, based on their rat subjects' ability to know their position at any given time.

Will the inner GPS someday help seasickness sufferers? Given that a yacht is constantly in motion, one would think that whatever cues a designer can make to help those “grid cells” locate a voyager's position in this bewildering universe the better.

Dr. Dak Kopec is a Boston-based environmental psychologist and the author of *Evidence Based Design* (Prentice Hall). “You can take the most gentle people and put them in the wrong environment and they can turn



Virtual skylights such as this one from Sky Factory activate parts of the brain associated with depth perception, creating a greater sense of space. Lower deck cabin, anyone?



The entry and egress point of the yacht might count far more than, say, the salon when it comes to making a design impression.

into raging lunatics,” says Kopec. “Take passenger rage on commercial flights...measurable increases in adrenal secretion. Boeing did a lot of groundbreaking studies on the territorial crowding that went into its Dreamliner 787. In the end, they were actually able to add more seats, but create a greater feeling of space.

“Evolutionary psychologists were able to prove that males differ from females regarding how much space and privacy they need,” continues Kopec. “Males evolved fifty thousand years ago as hunters, hard-wired to seek unobstructed terrain, and to communicate across the vastness nonverbally. Given that need for space, males are far more given to explosiveness around personal space violations and ‘air rage.’ Females evolved differently, gathering fruits and nuts in groups, communicating verbally. Their need is more for communal space.

“The Dreamliner did a number of things to address the issue: Enlarged windows, soothing cobalt colors, streamlined overhead bins, increased humidity in the cabin releasing more relaxing, negative ions. It should be noted for yacht owners that splashing water has the same negative ion-producing effect.”

So what about obtaining the extraordinary architectural effects, the EAEs on megayachts, now that everyone has settled down in negative ion-laced hunter-gatherer mode?

“We get a lot of interesting data from realtors who show houses,” says Kopec. “It's the first and last impressions that count far more than the ones in between, they tell us. The middle counts for almost nothing. Why this is so may be found in recent studies in neuro-linguistics. Our brains, they say, read words based mainly on seeing first and last letters, the ones in between are almost unnecessary.”

So the questions remains, does a true EAE experience depend almost exclusively on a megayacht's foyer, the point of entry and egress?

Professor Gardner might describe a beautiful yacht

interior as one you'd always want to return to. To ask whether this interior causes a 95 percent positive response or a 99.9 percent positive response seems silly. And yet, in terms of high performance, that's exactly what's being asked. So how do we know we have truly arrived at a 99.9 percent full-blast, EAE-type experience, a “floating palace” on the level of Chartres?

“In terms of performance, clients are now demanding more than can be delivered,” said Darragh O'Brien, managing editor of the *Evidence Based Design* journal, based in Kensington, Australia. “And even with the best megayacht designers, there are many things which just aren't predictable. In the automotive and aeronautic industry there's a lot of prototyping, but not so much for private yachts.”

The only way to really know what's going on with that unpredictable five percent, according to O'Brien, is to stop construction at 80 percent completion, and then proceed to tailor the remaining 20 percent based on feedback from the owner and crew.

“Post-occupying analysis will be the next new thing,” he predicts. “But that will involve a cultural sea change to say to a client, ‘You've hired the best in the world, but even the best in the world can't always get that unpredictable five percent just right — so let's check it out.’”

O'Brien is emphatic that scientific inquiry is not about having an answer. “Nor does it eliminate the irrational and creative. No good design has come out of the totally rational or the totally irrational, for that matter.”

The research coming out today about our brain's relationship to space, and space to the brain will surely provide more questions than answers. If there's skepticism on the part of the world's best megayacht designers, there's an equal measure of excitement. After all, one can say they are already hard-wired to achieving the very highest, Chartres-like levels of performance. ■

NEURO-LINGUISTICS

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