

Better Living through Circuitry? Challenging Bias in the Language of Materials

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For designers, it can be difficult to separate the image of a technological object from its function. We have come to admire an honest expression of function and construction expressed through the exterior skins of our buildings. Architects in particular have often transferred the imagery associated with building technology into the language of their design while attempting to convey an image of a "progressive", forward-looking design. We have reached an interesting time in our scientific development where, if predictions hold true, our computer technology will continue to decrease in size to the point where it will become effectively invisible. Will the technology used in buildings follow a similar trend? If so it raises an interesting (rhetorical) question: If future architecture language continues to draw inspiration from technology, and if technology decreases in perceptibility to the point of near invisibility, from where will we derive our language for "progressive" design?

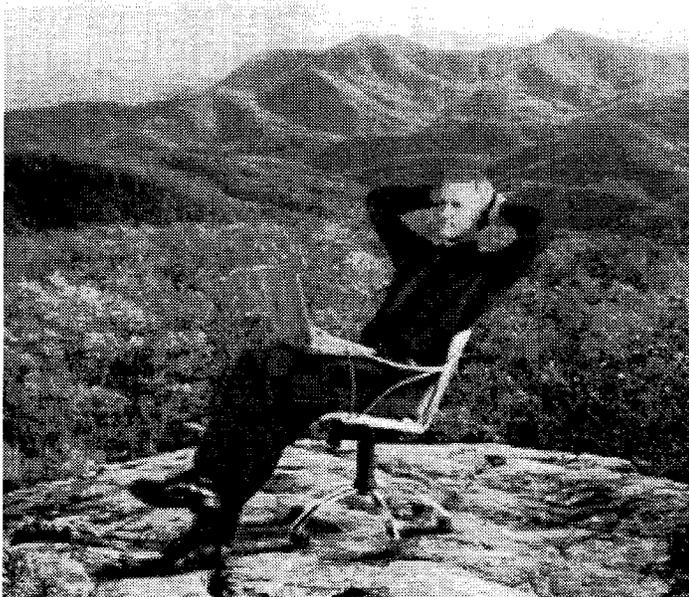


Fig. 1. Laptop Computer Advertisement

Over the past several years, many digital equipment manufacturers have promoted their products with the enticement of a return to a simpler, less stressful work-life. The image that resonates is of laptop owner beaming his data effortlessly via satellite from the comfort of some pristine tropical beach. The message seems clear. Recent improvements in digital technology can free us from the confining corporate office environment and allow self-determination of lifestyle. However as sometimes happens

with predictions of this type, rather than allowing more free time by shortening the time required to perform a task, technology has heightened expectations of productivity. This leads to an increase in workload rather than to relieve an overload. We saw a similar situation in the 1960's when Dow Chemical Corporation advertised its products under the slogan "Better Living Through Chemistry". It and other corporations prophesied an improved, cleaner, safer world through the messiah of man-made chemical compounds; especially plastics. While no one could ever deny the life-changing benefits we have derived from such materials, especially in the medical fields, there has been an unintended backlash when they were used to make something not necessarily better, but less expensive. Profits before progress? The name 'plastic' is now often associated with a derogatory description of inferior quality. But this is not the fault of the material itself as many beautiful objects are made from it. The blame lies on the manner in which it has been used and misused.

Now digital technology is suffering a similar fate. The computer, as if it was a living thing itself, has been accused of being dehumanizing, of replacing people with soulless machines. In many cases this is justified. Anyone who has become trapped on an electronic answering service without hope of reaching a live human voice can serve witness to this. But we have come to accept that 'progress' sometimes necessitates the loss of something valuable. While digital technology is truly improving our lives, it also carries along negative baggage. Two steps forward and one step back.

However we are about to make a giant jump in digital technology that will significantly change the way we live as well as how we define computers themselves. With the advent of the millennium, there have been an abundance of predictions about the form of our future living environment. In an issue of the New York Times Magazine from June 2000, there was a 'catalog of the future' which predicted, based upon research currently underway, what technology would resemble in the year 2010.¹ While the articles covered a wide range from medical to lifestyle changes, a common link between them all was the dependence on a dramatic decrease in size and concurrent phenomenal increase in speed of computer circuitry. If these predictions are correct, computer hardware is going to all but disappear from view to the naked eye. Microscopic robots will be inserted into our bodies to monitor health. Miniature sensing devices in our houses, cars and workplaces will predict our wishes ahead of time. Computers will be reduced to only the devices required for human interface through all the senses, not just touch. Voice and sight activated input devices will eliminate the need for keyboards and mice, all hardware will be located out of site. A critical aspect of all this reduction is the fact that most technology will effectively become *invisible*.

THE LANGUAGE OF ARCHITECTURAL TECHNOLOGY

Designers have often looked to machines as an inspiration when attempting to convey a visual image of a future world. The perceived promise of technology has had a collateral effect of transferring machine imagery onto non-mechanical objects, including our architecture. It is well known that some early 20th century architects looked to the forms of ships, airplanes and other machinery of industrial production for formal inspiration. (Le Corbusier went as far as to describe the house as a "machine for living".) The Futurist movement, championed in architecture by Antonio Sant'Elia, rejected traditionalism and embraced industry with an "aggressive adulation of the machine"². It was hoped the language of machine technology would carry, by association, the 'promise of the future' being sought. There has since developed an unofficial 'language' for buildings that strive to be 'modern' based not only on form but a palette of accepted construction materials as well. Materials like steel, aluminum and glass (produced by machines themselves) share common characteristics of being shiny, smooth and precise. To many architects it seems inconceivable for a 'progressive' design to be built from anything but this collection of 'modern' materials. The only exception being a brand new one.

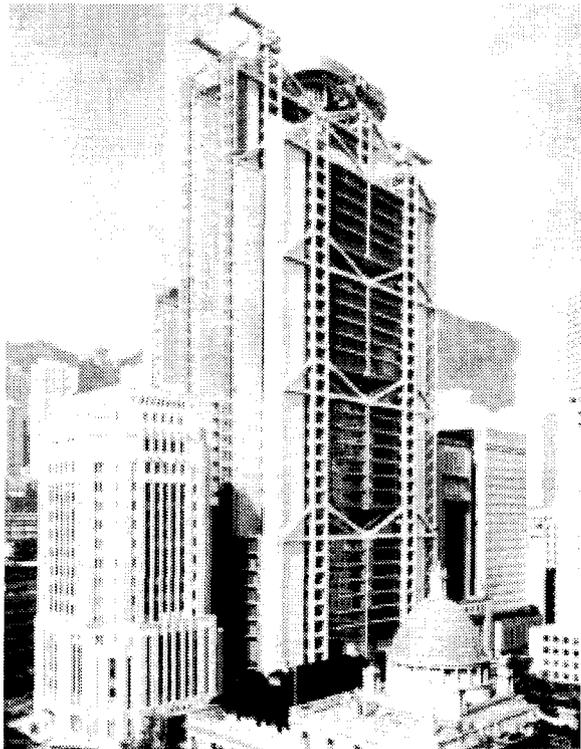


Fig. 2. Hong Kong Bank, Norman Foster

So-called "High Tech" architects have made a case for tectonic expression by looking inward to the structural, mechanical and enclosure systems for inspiration rather than from an external, imposed source. Using inherent elements of a building as a vocabulary can provide a more honest expression of construction techniques. But should tectonic systems have such an overwhelming priority? If so, under what conditions? Can't a 'progressive' building be built from materials other than just metal, glass and concrete?

Some of the most revealing clues about how we as a culture envision the future come from visionary designers who attempt to predict the form of our future world. With few exceptions much of the language is strongly influenced by our technology. From the thoughtful predictions of Archigram to the more fantastic images of animated worlds like "The Jetsons" television

series, technology was a chief influence on architectural form. When Ray Bradbury wrote "The Martian Chronicles" in 1946, with its predictions of everyday rocket travel, he set it in the years 1999 to 2005.³ Yet the predicted dates for these fantasies to become reality have come and gone and our architectural environment has remained relatively unchanged. Though by now we were suppose to be flying our air-ships to our acrylic biomorphic pod homes, it is still a fact that the most popular form of new house construction today is the single-family pseudo-colonial home with its wood-grained vinyl siding and screwed-on plastic shutters. Why at the turn of a new millennium does the public still long for a style of home that reflects a time 200 years in the past?

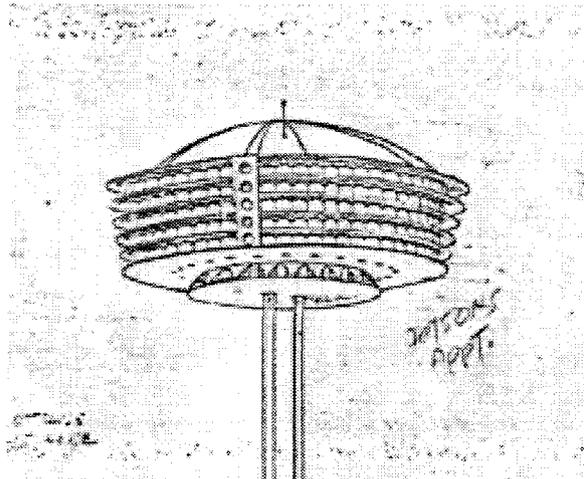


Fig. 3. Jetson's Home

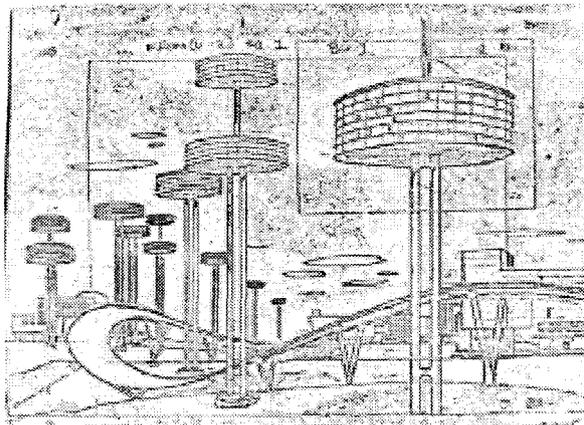


Fig. 4. Jetson's City

There seems to be a common belief among designers that to be progressive, architecture must become more curvilinear in form and sleek in material. (In the same way many fashion designers predict we will eventually all be wearing one-piece, metallic, form-hugging clothing.) Are these stereotypical images of the future that we are destined to fulfill? Are we blindly following a supposed predetermined course? Maybe, as in other fields, designers have underestimated the degree to which people want or the speed with which they can accept change. Especially today with the rapid speed of digital turnover, it seems safe to say that people can not change as fast as our technology. Peter F. Smith has found that psychological studies indicate humans need an aesthetic balance between the new and the familiar to feel excited about a new object or idea. Too much of the familiar can be boring; too much of the new is unsettling. People find pleasure when there is a balance between the two.⁴ But now

that new technology is moving faster than ever before, will humans out of the technology circle get forever left behind? Are we getting too much new technology too fast that causes people to cling to nostalgic images of the past or has our culture not yet adjusted to the changes?

Many have predicted that as our dependency on technology grows, the greater the affect will be on the appearance of our environment. But now that technology is decreasing in perceptibility to the point of near invisibility, it will likely have less of an influence on all design language. Without the language of technology to inspire (or distract) us, we may have a chance to reflect more broadly on our present culture. Technology has gotten so far ahead of us that it has the opportunity to lap us in the race. But instead of thinking of it a full lap ahead we can consider that it is going to come up alongside us to work together. We could not have asked technology to be constrained. It had to sprint out ahead of our culture to test its legs so that it could find a way back into it. Because of the fact technology will become less visible yet friendlier, it should become less inhibiting. As computer/human interface devices improve, the conscious realization of working with a machine will greatly decrease. So that even though the layperson will not understand the complexities behind the technology, they will be more willing to use it. If we are longer focused on the physical machine, what other doors will now be open?

MATERIAL BIAS

Building technology and digital technology operate on two different scales. No matter how small electronic appliances become, buildings must still conform to the size of the unchanging human body. However, many of the technological systems found in and on our buildings will decrease or disappear. For example, while buildings will not likely be able to disregard gravity, future super-strong materials could greatly reduce the visual impact of structural systems. A decreasing presence of technology might result in a similar decrease of the previously mentioned material biases linked to building construction. However, removing engrained associations between construction materials and architectural style would be difficult as it starts early in an architect's education. Because students associate materials with different architectural styles, they develop certain biased opinions and attitudes about construction materials. Throughout their study of architectural history, they see that the oldest buildings, from Egyptian and Greek times on through the centuries, are made of stone. Brick is observed on buildings from Roman times through the last century but less often on a work of contemporary architecture. Even though wood has not physically survived as well, it has been used for thousands of years and therefore students tend to associate it along with brick and stone as a "traditional" building material. On the other hand, because of their relatively recent development during the 19th century, building materials such as steel, reinforced concrete and sheet glass have had a profound effect on the development of modern architecture. The steel frame's ability to open up building interiors to endless spatial possibilities has helped revise our notion of space itself. These new materials provide such a freedom of expression that they have become an inseparable part of the language of modern architecture and thus have become 'modern' materials themselves (or at least to my students they have). Because of this tendency, students make assumptions about the timeliness of their design based solely upon the materials chosen for the exterior. If asked why they chose to use steel and glass for an elevation, they will often reply "because it is a 'modern building'", implying you would never make a modern building out of brick. If asked what "modern" means to them, they might describe something that is 'forward-looking' or 'avant-garde'.

So it seems the language of technology, at least in the form of construction materials, has become closely linked with the desired ideal of progressive design, of striving towards the future. I worry that if this narrow frame of thought continues architects will separate even further into two camps of those who either look blindly forward or cling stubbornly to the nostalgia of the past. It is hard to believe that designers who want to keep pushing the envelope of architectural expression can only do so through the use of newer materials. While we should investigate the use of new and soon to be developed materials, we should not assume that the older materials no longer have relevancy. We should not throw the baby out with the bath water. When I think some of the most psychologically comfortable spaces I've visited, a large majority of them are built of brick, stone or wood. On the other hand some of the most exciting spaces I've experienced have been created from metal, glass or concrete. But by far I am most stimulated by buildings that combine both 'categories'. Beautiful relevant contemporary buildings can be made out of any current materials or any yet to come. While I realize many decisions about material choice are due to economic factors, all materials should still be judged on their own merits and not stereotypes of the past. Then the material can be applied in a manner appropriate to its particular situation. Or as Aris Konstantinidis concisely states:

"I believe we can create contemporary architecture with all materials-with any material as long as we use it correctly according to its properties. In areas where we can find nothing but stone, we shall build with that stone, that is the local stone. We shall create contemporary architecture as we would have done with any other material (iron, concrete, wood) which we would have found in another area, because the leading ideas are the spirit of construction and the flexibility of our outlook and not the constructional whim foreign to the site."⁵

But how do we determine what is *appropriate*? The word can have various interpretations. I believe good role models can be found in the work of many Spanish architects during the post-Franco years. While creating very modern and spatially exciting buildings, they are not inhibited from blending regional forms and materials into their designs. What William Curtis describes as "combining the absorption of new ideals from outside with subliminal continuities of indigenous themes".⁶

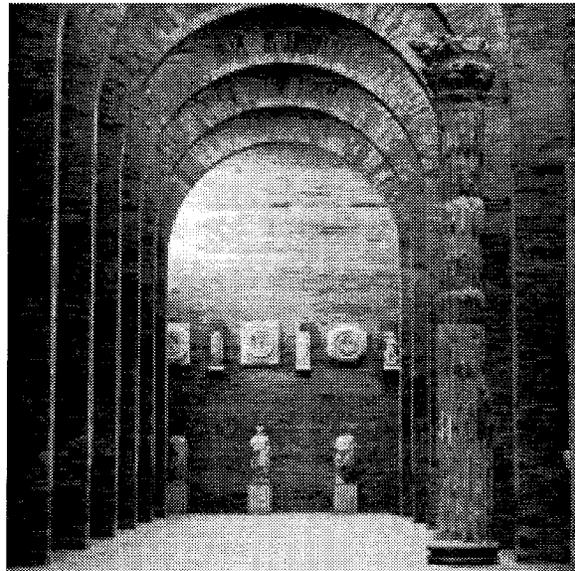


Fig. 5. Merrida Museum of Roman Art, Raphael Moneo

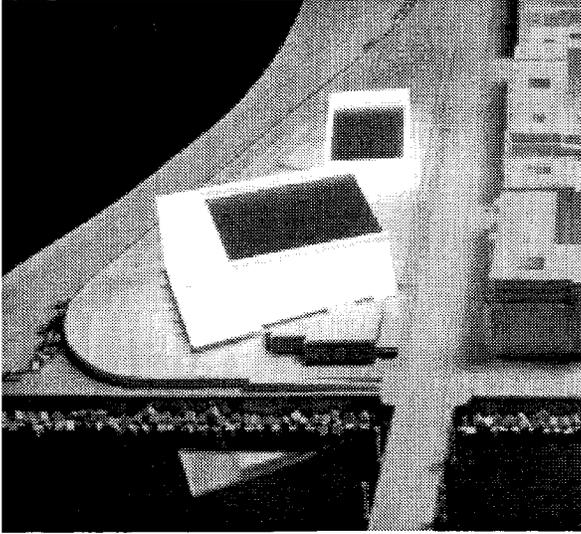


Fig. 6. Kursaal Auditorium and Cultural Center, Raphael Moneo

Rafael Moneo stands out as one who has demonstrated how any material can be used in a modern way as long as it is addressing the immediate situation. In his design for the Merida Museum he uses Roman bricks as a way of relating to the local context as well as the building's function as a collection of Roman art. Yet in his design for the Kursaal Auditoriums in San Sebastian, he utilizes a steel and glass double-layered envelope to create crystalline prisms at a border site between the sea and the city, a situation which allows and further celebrates these types of materials. Moneo has the ability to adjust a design to any medium the situation calls for. Richard Ingersoll in his article *The Unmodern Moderns*, refers to the current architectural situation in Spain: "There is no place else in the world where the majority of contemporary architecture fits so comfortably into its urban setting, yet transmits such an optimistic sense of the new."⁷ This sense of excitement reinforces the idea of a need to psychologically balance the new and the familiar.

FORWARD TO THE PAST OR BACK TO THE FUTURE

In a recent article, Alexander Tzonis compared the different ways in which architects approach digital technology. Too many, he believes, employ the computer primarily as a means to arrive at a building's form. What he

defines as "exercises in shape-hedonism and space-bulimia - gratuitous formal statements that remain starved of purpose"⁸. He sees an alternative approach to the computer as a tool that can do more than just ease the current design process; it can enable design vision as well. In this way technology can be used to create positive social and environmental change. "The very tools that are being used to liberate architectural form are also capable of liberating a more livable world."⁹ We should use technology responsibly in a manner appropriate to its particular situation. Just because we have the technology to create a 'blob' does not alone justify its creation. While I am excited about the new forms possible through the computer, these biomorphic shapes seem to be applied ad hoc to any and all situations. Maybe the computer is still too new for us to see past all the flashy bells and whistles. It is a brand new toy that we have not yet become bored with. But once technology becomes 'invisible', we can return to issues that are important to us as human beings; making spaces livable and humane. We should take this opportunity get past the stigmas of technological imagery. In this way high technology can actually lead us, in a sense, forward to the past. But not the past of pure nostalgia, instead to the world where people, not machines, are our *first* consideration for design, something we may have neglected in our race to the future.

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