American Institute of Architects

Change or perish

Report on integrated practice

Remarks on building information modeling at the 2005 AIA Convention, Las Vegas

AIA

1

Thom Mayne FAIA
Morphosis, Santa Monica, CA

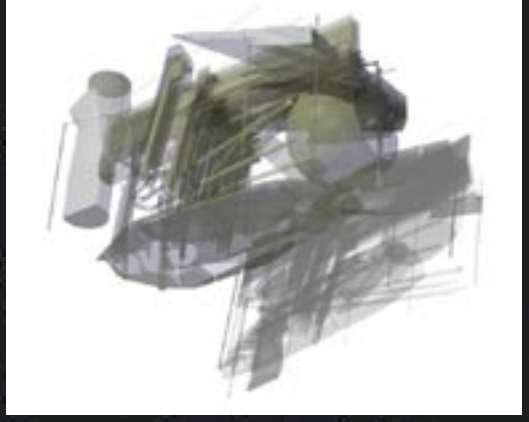
Thom Mayne FAIA

Morphosis, Santa Monica, CA

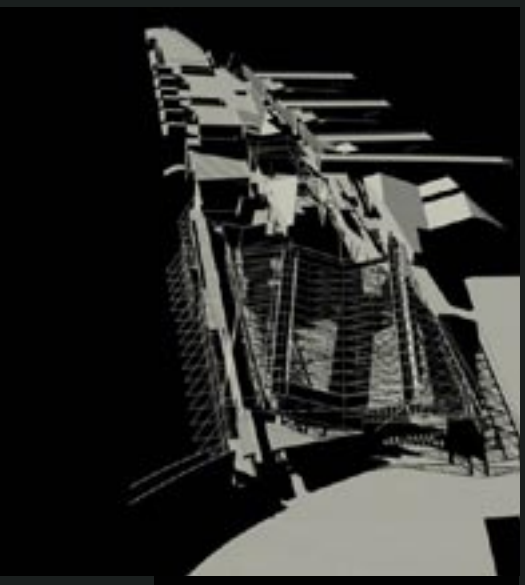
May 20, 2005

Moderator: *Now it's a great honor and pleasure to introduce our last panelist, 2005 Pritzker Prize winner, Thom Mayne, Principal, Morphosis. Thom.*

Thom: *Nice to be here this morning.*

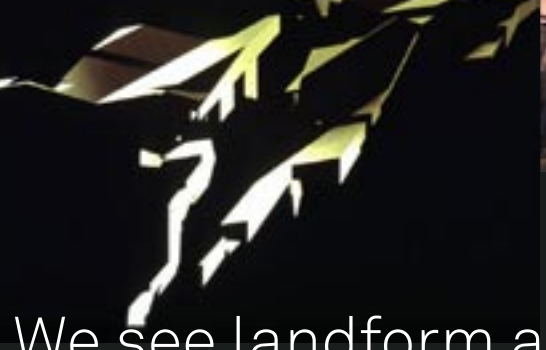


You need to prepare yourself for a profession that you're not going to recognize a decade from now, that the next generation is going to occupy. Our work begins with desire, initiated by us as architects not only in response to our clients, but in response to something much more active and engaged.



After 25 years, our projects conceptualize collisions, intersections, intensifications, and juxtapositions, inventing conditions for an architecture we couldn't imagine. I've always been interested in the processes of architecture that are imbedded in the invention of something that you couldn't get to without that process, and of course the computer really advances those ideas. The tools we now utilize simplify these potentialities and make them logical, allowing us to produce spaces that even ten years ago would have been difficult to conceive, much less build. Anything that is possible is realizable. Our conceptual thinking is increasingly embedding tectonic, constructional, and material design parameters. Less emphasis on designing in the traditional sense—styling, let's say—and more emphasis on making.

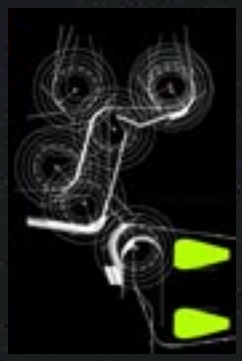
This is the San Francisco GSA in process today. One of our performance goals for this project is represented by my wife's Honda hybrid. You can get 75 miles a gallon sailing this car; the key word is sailing, not driving. This car uses state-of-the-art technology. This is what we should demand of our work as architects, proactively: increasing performance, responding to shifting world conditions. This building's envelope utilizes a dynamic, metabolic skin. It opens and closes. Like the car, a hybrid, it replaces 70 percent of the AC demand with natural ventilation, a first for a tall building in this country. We did no two-dimensional drawings for this project. Three-dimensional models provided a continuity from the initial concept to construction documents. The design model connects directly with the Permasteelisa Group, which continued through the design process, blurring the line between the architect and sub-contractor. The model feeds directly into prototyping; and finally, into the fabrication and assembly of the construction. This environment is no longer linear. It allows us to continually move back and forth between micro and macro. Think of Charles and Ray Eames and *The Powers of Ten*.



We see landform as a diagram for architecture, a departure point, Michael Heizer's *Double Negative* for example. We invent, imagine our work three-dimensionally. Our organizations and forms are interested only in what is possible with these new tools. There exists a new medium, a continuity, a flow of thinking, a design methodology which is more cohesive from the first generative idea, through construction, coordinating millions of bits of discrete data.

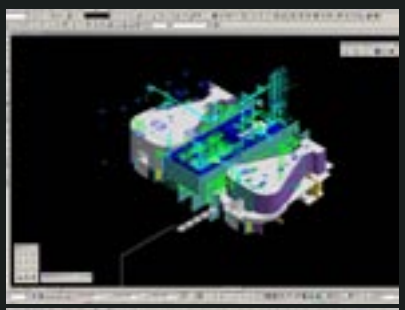
This is our courthouse in Eugene. The time compression of digital models allowed us to produce a large number of alternative concepts, responding to the demands of a complex set of variables – programmatic, urban, and human. You're looking at a series of models we did, maybe 45 of them. There would be times where I would analyze one of these and work with it. We would put it into a rapid-prototyping-model-making machine at 9 o'clock at night, come in at 7 in the morning, look at it, work on it, draw on it. We'd spend a day at it and then go at it again. In this case, we did maybe 34, 35 models within a 2 month period, which radically changes our ability to look at huge numbers of options. The key is that this integrated process allows us to maintain the integrity of our evolving design ideas.

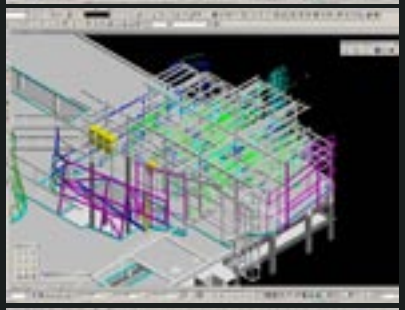
In this project, we wanted fluidity of connections, which we translated into surfaces representing the iconic status of our court, which we tested and modeled, both virtually and physically, using the same medium. Again, we used rapid-prototyping; hands are not touching this.

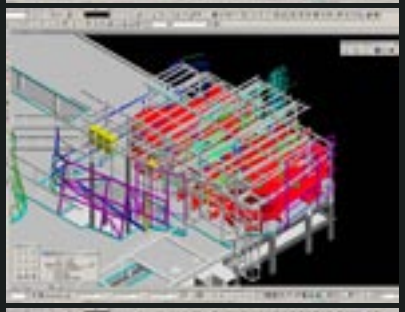


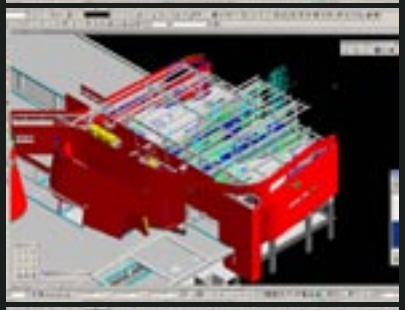
I have an office that I couldn't even imagine ten years ago. We can produce these kinds of models every evening and work at a pace that's much more connected to how we think, both in terms of detailing and large issues and in terms of the speed that we want to move at, since our minds are always moving much quicker than the mechanical aspects of the work. Here you see the same model developed from the point of view of building systems. The courtrooms represent a kind of critical mass, which represents a density of interacting systems. What these systems do is allow us to deal proactively with a huge number of integrative acts within a complex building. From this output, we can analyze each building system in isolation with a high level of specificity, starting from the structural systems, solving the connection details and the distribution of mechanical systems. The duct work is fabricated from these models, also the building envelope, which is the most architecturally challenging aspect of this particular project in terms of its geometry and mathematics and finally its fabrication. All this leads to a completed work, which translates into value, anticipating and solving issues of a complex, integrative nature.

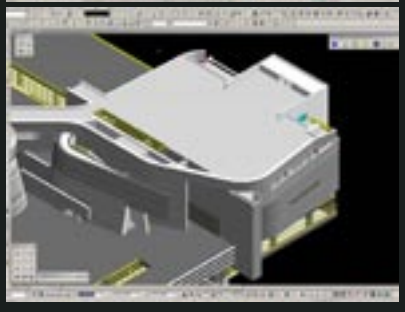
I end where I began, acknowledging the infinite potential of our architecture – imagining, creating, transforming, emerging from our desires and our imagination. Anything you can imagine is possible. Thank you.











Q: By what means can the architects in this audience accelerate their understanding of this new technology and all its implications for practice?

A: Gestalt. Total Gestalt.

We computerized our office just a little over ten years ago. It was a hunch on my part. It was also about understanding survival. I had no clue what to do. None. But my instinct was that this was more of a revolutionary thing taking place, not an evolutionary thing. This wasn't just a better machine to do what we were already doing manually. It was something that would completely and totally affect the way we think and conceive architecture, also the way we produce it and documenting it for construction—the way we think about it for construction. The most important thing is to understand that it isn't just about the nature of how we put together our packages. It has to do with a complete rethinking of our work. It can come from several different directions. It has to do with making an architecture, which has a complexity, which has demands, formal demands that can only be executed with these types of tools. For example, the Frank Gehry model, which he's done so successfully – it can also come from increasing the performance requirement, like that car I showed.

One of the problems with our profession—a problem that has made it somewhat weak—is that it's so overly invested in incredibly antiquated ideas and style and history and notions that should have been gone a hundred years ago. We should concentrate on the reality of what architecture is in a modern society, and how it performs in that society environmentally, culturally, socially, and politically. That's where the discussion has to start. These tools let us align desires with demands.

I haven't drawn a plan for five years. I go to schools now that are still drawing plans and sections, and I have no idea what to talk about. Because once you start getting used to these tools, it's like flying a jet plane and then going back and flying a prop. Even though you're doing it for some nostalgic reason it would be impossible to get used to flying from Los Angeles to New York in ten hours. Once you get used to working three-dimensionally, there's no going back. It represents a new totality.

Q: What one message should every practicing architect take home from this session?

A: Survival. If you want to survive, you're going to have to change. If you don't change, you're going to perish. Simple as that. It's such a basic thing. You will not practice architecture if you're not up to speed with this. You will absolutely not practice architecture in ten years. I have no doubt about it, no question. It's changing very rapidly. My office doesn't resemble what it did fifteen years ago. It's a completely different office. Different staff, different skill sets, different time sequences, different services. It's going to put us back as builders, which is the absolute key. I graduated in 1969. Since then architecture has been eviscerated. We're cake decorators, we're stylists. If you're not dealing in the direct performance of a work and if you're not building it and taking responsibility for it, and standing behind your product, you will not exist as a profession. We agree, yeah?