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Shared Transformation

Lisa Iwamoto

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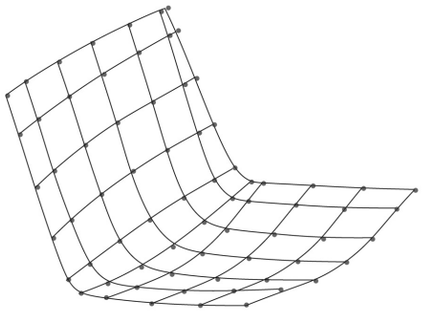
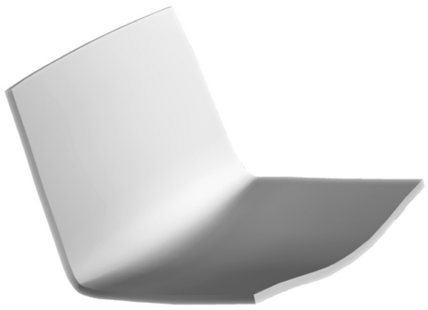
Shared Transformation

A conversation with Lisa Iwamoto of IwamotoScott Architecture





You pursue architecture as a form of applied design research. How do you understand advancements in technology within an architectural paradigm affecting the research process?

Iwamoto: Technology is changing so quickly. Brand new technology is not developed everyday, but certainly we experience interface changes frequently. Software packages change, expire, and come back as something new and active.

If you asked this question six to eight years ago, I would have answered a little bit differently. In the past, our firm has made an effort to keep up with every new software package that came out, exploring user techniques and package relevance.

For example, with regard to digital fabrication, emphasis on understanding different tools, their adaptation and how each of them work was once at the forefront of our design process. Presently, however, our design process has been able to more seamlessly integrate these things throughout the duration of a project as methods towards an end result.

Despite this change in our process, digital fabrication tools continue to merit our consideration. I focused on digital fabrication in my teaching for about four years, a decade ago. There was a big learning curve for us, as well as for the students. Now, I recognize that this particular kind of technology hasn't changed much although the software itself is different.

When we pursue a project now, we reference a more innate knowledge of our tools. We don't need to, I think in a good way, preface them in the design process or the outcome. In fact, if anything, we have been interested in redefining the more normative uses of our technologies.

For example, any kind of fabrication technology has certain things that it likes to do—routing, surface tool paths, laser cutting wax in terms of sizing and material and so on. We ask ourselves how we might use these tools to contradict what would generally be expected of the technology.

Since your work on the spiral chair, several years ago, how has your understanding of the relationships between digital modeling, computer controlled production, and material research changed?

Iwamoto: The attitude and process with which we made that chair, working back and forth between physical and digital media, has not changed in our work. This is not something that is unique to our practice, but it is extremely important to us. We always work back and forth.

Often, we begin by exploring material constraints, thinking about how materials can become computational. This negates giving something to the computer initially and then

later figuring out how we are going to make it.

We begin by working with a material, thinking about how we can employ it. At the point of the very first conceptual digital sketch, we're already exploring how it might and should be made.

The Spiral Chair came from this process and so, too, have our more recent projects-one in particular, winning and featured at Carney. This process is supported in projects that we fabricate ourselves, and even on projects that we don't. We understand the necessity of a buildable design.

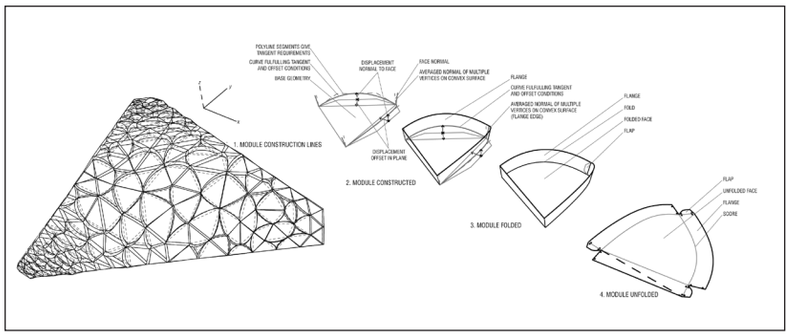
The more difficult thing, I would say, in using this approach, is getting other people to understand a more streamlined process. For example, with the hanging light coffers that won Carney, all their rigidity is achieved through folded seams, along the corners, at the top, and at the base. It is a very simple construction; glue and wood laminate material cut with a laser cutter.

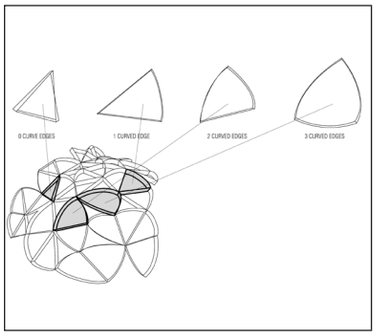
It was very difficult for the contractor to understand this construction because the template, albeit a little complicated, was unfamiliar. It was, in fact, very simple to put back into three dimensions and confounding, in that it didn't involve a lot of different parts. It didn't have a lot of fasteners, it didn't involve the kinds of hardware that they were used to, in making something of that scale. We wound up making mock ups, ourselves, to prove that it could be done in a streamlined fashion.

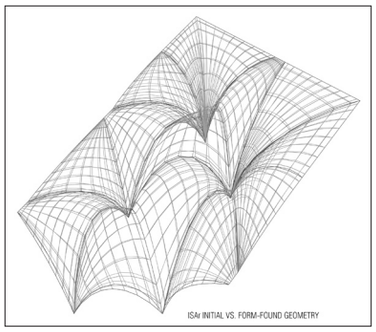
That provokes an interesting discussion. Do you see that advancements in our technology and in our tools, those of the architect and of the designer, are fostering general communication discrepancies with the contractor?

Iwamoto: Yes, for us it has. However, this is not true for all fabrications. We have had other panels and things like that made successfully. There are plenty of CNC cabinetmakers in our area of San Francisco now. With their advice, we can treat a surface, a piece of plywood or bamboo, and we can do it in our own office. They understand what we want to accomplish and help us to use the right tool paths. We rely on these people to help us figure out the right fits, the right materials, how to implement shipping, and much more. They are really good at that.

The issue comes in moving from two to three dimensions, which is of course our biggest interest as architects and designers. People, contractors included, are used to looking at two dimensions. Contractors read construction drawings, which are in two dimensions. They come to understand a building as a set of planes, and they're used to aggregating and placing them. They are not so used to folding together a building, fold-






ISAI INITIAL VS. FORM-FOUND GEOMETRY

ing together its parts. This is much more difficult, absolutely, for us to communicate.

Is it fair to say that the computer is no longer a tool of production, but a tool for process and development work as well?

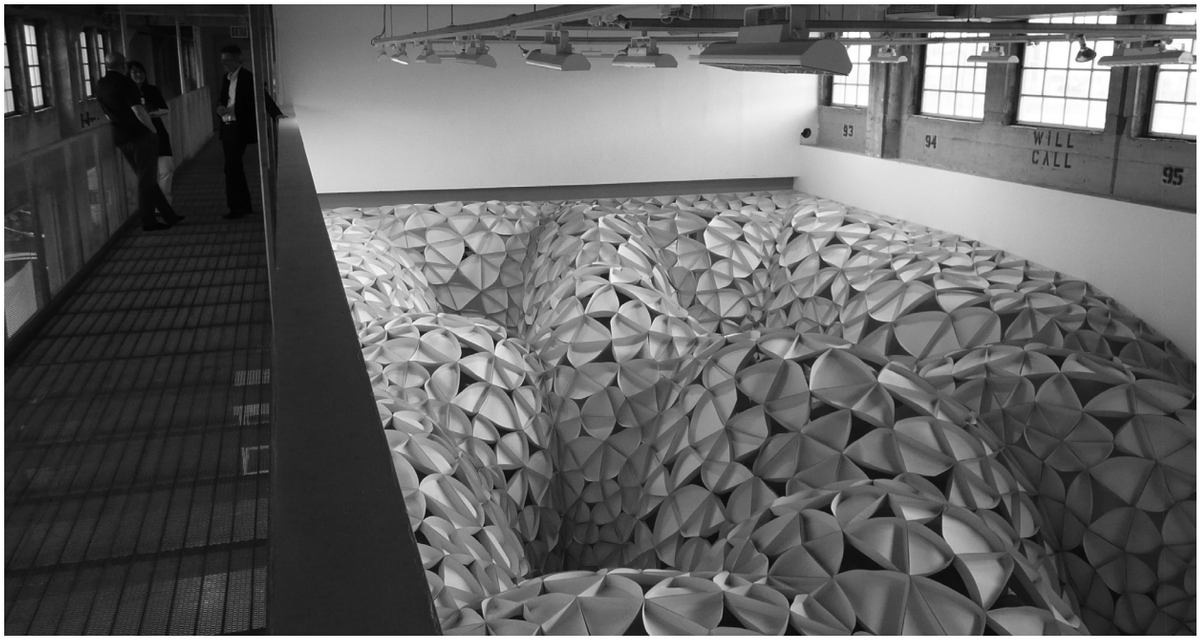
Iwamoto: Yes, I definitely think that's true. My firm is not at the cutting edge of the visualization side of architecture. Many architects in our state, particularly in the southern part, Los Angeles, are. But, even in those instances, I see that the computer has become an integral part of the design process, from conception, through production.

Please explain how programs, such as Rhino, have allowed you to press and explore geometries, their structural ramifications, and their material manifestations, in projects such as Voussoir Cloud.

Iwamoto: That is a really interesting question. In your own work, as students, you set out with a design project, and you're not quite sure where it's going to end, but along the way you make discoveries and they lead to new realizations and approaches in thinking about how to make architecture.

The Voussoir Cloud Project was like this for our firm.

We began with handmade models and open minds, recognizing that the scoring of a piece of paper reads



as a seam. Folding it and going, "Huh, that's interesting, it's dishing in section, it's folding in plan, it's becoming quite rigid, you get this baring surface, what if we put three together, what if we put twelve together?" Through these exercises, we became conscious of an overall curvature, so at the point that the model became digitized, the complicated part was computing that curve. The material was doing very naturally what it wanted to do by folding along a curved seam. We discovered, however, that there is still much that mathematicians do not know in determining exactly how something curves and why. We ended up doing a lot of internet research on curved folding. We found a very complicated logarithmic function and had one person in our office, who wasn't daunted by it, study it. We determined a simple proportion for the module edition section, how it bent in plan based on the curvature of the fold, that we then used to complete the model as a whole.

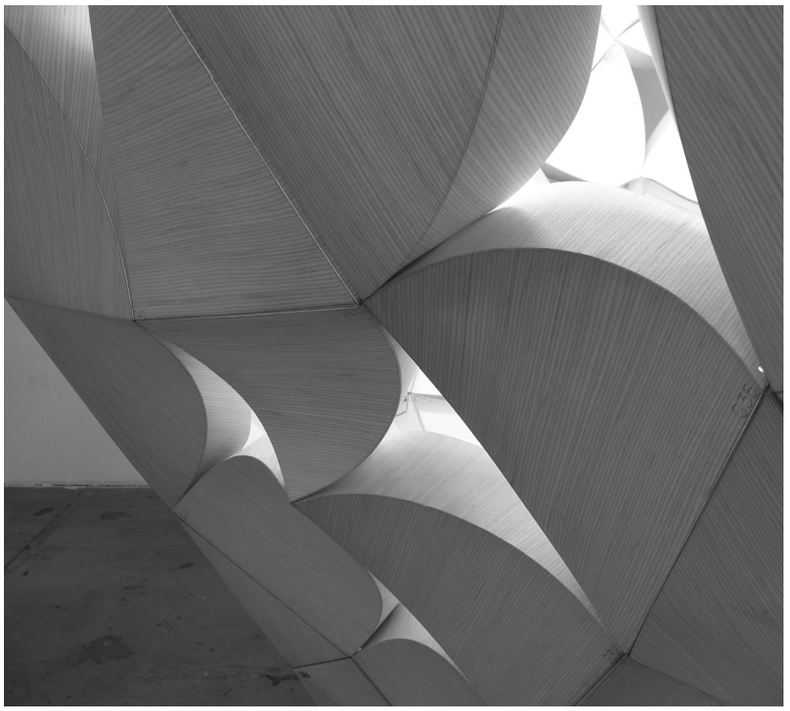
From that point, in the process of digitizing the whole thing and knowing we would be working with vaults of some sort, we started collaborating with engineers to unveil the idealized curvature of the vaults, so that the pieces would sustain the least amount of stress.

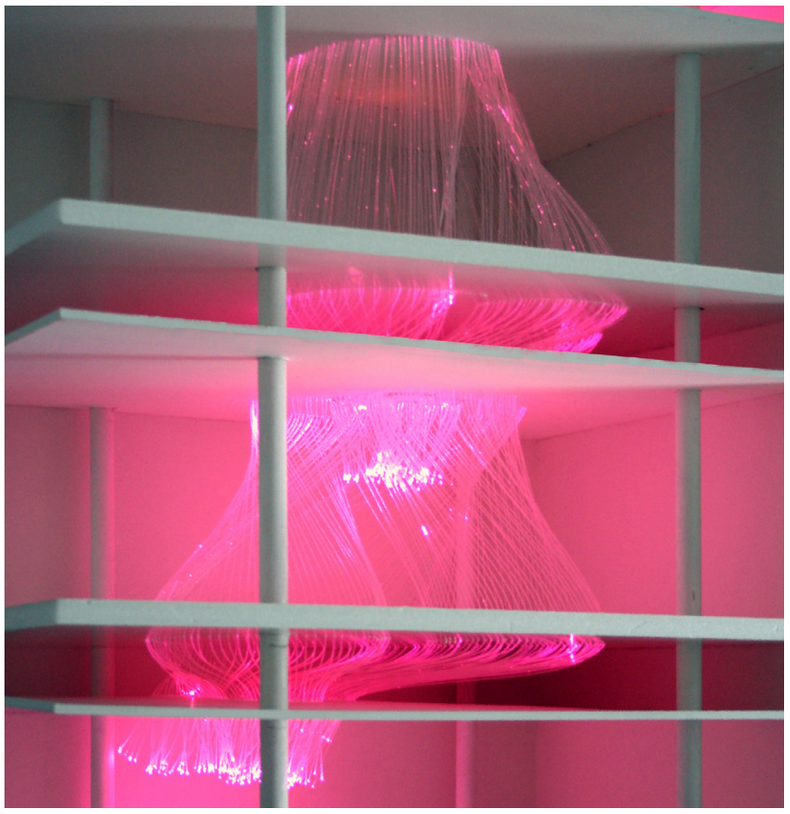
We completed the project and understood that the relationship between structure of material, the module and the overall surface became really, really interesting. It emerged from the project as we moved through it. I recognize now the import of this project. In 2002, I became weary of teaching my digital fabrication courses because I felt like I wasn't learning in the process. After having taken a break and returned to them with new methodology, they merit renewed and motivated interest. We begin by analyzing structural geometry so that the students start by looking at vaults, folded plates, columns, shelves, etc. and how they might work together to develop a larger system. The Voussoir Cloud project reenergized my interest in studying and using these techniques. Now, my partner Craig Scott and I use this work as the foundation for our teaching at Harvard, Cornell, and Berkeley.

How and when does material choice present itself within your design process?

Iwamoto: That's another really good question. Sometimes we find it along the way, but once we have found it and find that we like it, we tend to use it again.

For example, we have used a wood veneer now in at least four projects. We also work with fiber optics and, more recently, metal. Figuring out how a material works is, at first, a clumsy process. We talk with all of the suppliers and then we learn about the material's lines and about its surface. As we learn more about a material, we use it more often.





What delineation do you view between digital media and our built environment?

Iwamoto: I think the connections between digital media and our environment are getting closer and closer. Before something is built now, we can represent its reality fairly closely because the qualities of animations, films, etc. are so well adept in conveying an experience. Right now, my firm happens to be sharing an office with one of the best immersive media companies in the country, Obscura Digital. We have started cooperating with them on some projects and have developed a sincere interest in making immersive environments, which are both about the physical and virtual definitions of space.

I think the challenge, understood through our projects In-Out Curtain, mOCEAN, and EAV2, a small installation, is that experience doesn't want to be dictated. Perhaps it is nice to give someone a packaged experience conveying how one is meant to understand and experience a space. That's great, and it will work for a short period of time. However, the best architecture and the best spaces have always been the ones that can be re-understood and re-imagined over time. The folding together of virtual and physical space is exciting but I think it requires an attention to, and appreciation for, the human imagination.

Can you experience architecture through a drawing, such as an architectural plan, section, elevation, or rendering?

Iwamoto: I think the one thing that still differentiates architects from non-architects is their ability to do exactly that. Our ability to envision three dimensions out of two is what makes us unique. In the midst of such sophisticated technology, it is important to continue to look at plans and sections and allow ourselves the opportunity to fit into a longer lineage of architecture. We can look at our plan in relation to plans developed 50, 100, 300, and even 600 years ago. We can make connections between them and learn from them. You can't really do that with other media.

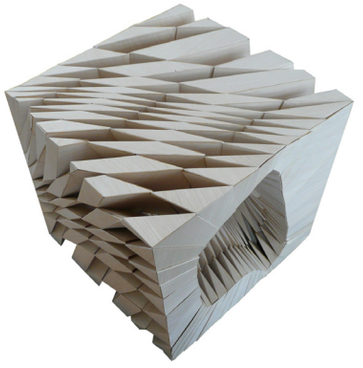
How has your work in digital fabrication changed your exploration of natural and simulated natural light, as in the FiberOpticRoom?

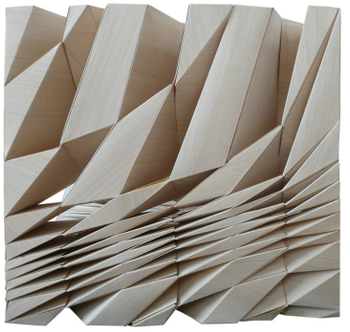
Iwamoto: Our fiber-optic proposals have been about creating a very certain kind of atmosphere, an ambient, evocative, glowing space. That's what fiber optics affords. We have explored fiber optics for temporary exhibits and they have proved appropriate for these means. Now, we are starting to think about fiber optics and their relation to daylighting and to general qualities of light. There is a functional need to be more cognizant of this. We note the realization that with trying to consume less energy, we can use the sun way more.

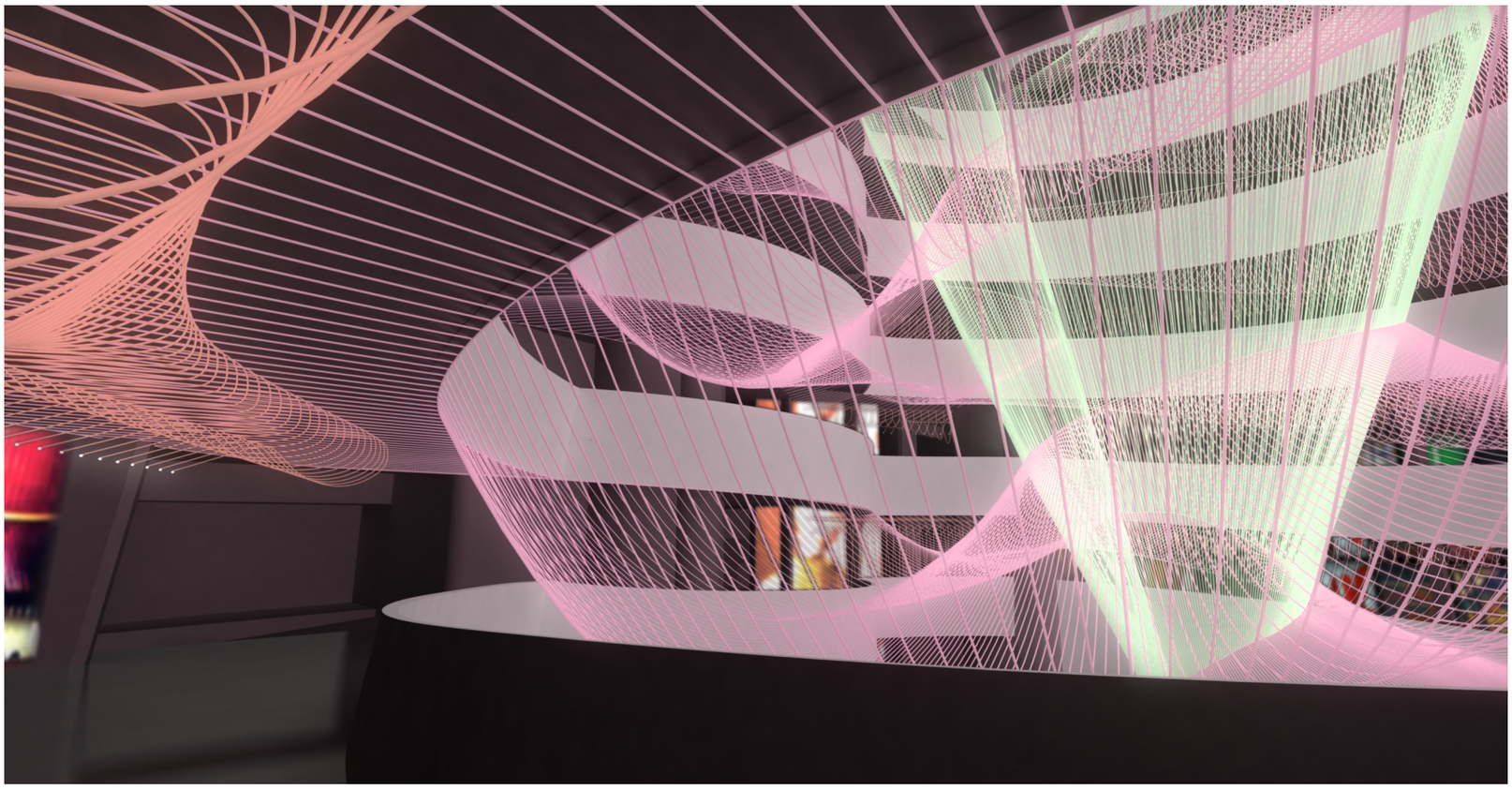
In the Gwangju Restbox Project, you took inspiration from traditional poems and text, utilizing them as mechanisms from which to design. Please elaborate on the opportunities, as you see them, in combining new technology with traditional design and culture.

Iwamoto: The curators wanted a space for sitting that would evoke qualities of famous gardens in Korea. Having never been to Korea nor visited these gardens, we took inspiration from images of them. The images expressed extreme light and dark with strong and crisp shadows, and an interstitial dappled light. We chose to work with a thin luminescent sheet to express these suggestions materially. We used the sheets in a block-like fashion, in that the pieces themselves formed blocks. From these blocks, the project adopts the human figure and abstracts it in a couple of ways. The seating is about the positioning of the body and the interior of the volume. We projected surfaces, in a sense, to the exterior of the cube, which is why the pattern on the outside changes from a horizontal to a vertical orientation. It responds to the position of the person on the inside. In this project we chose to use a particular way of sectioning something, which is non-normal to the volume but normal to the human figure. The strategy was to array a set of sections relative to a seated figure. Working within this traditional conceptual frame did not change our application or consideration of the tools and technology used.

Using the Guggenheim Light Cone as precedent, what do you see as the strengths, benefits, or interests, in implementing new technology in existing or historical projects?







Iwamoto: A lot of our projects are in existing buildings—perhaps all of them now. This is, in part, because we practice in San Francisco and the city is completely dense. In every project, the ability to keep qualities of the original has been really important to us. The challenges are not to disguise original characteristics and mask them so that the final product reads like a brand new building, but to keep them and provide a well-considered and strategic insertion. In our work, those insertions are more ephemeral and light-based, like with the Guggenheim, but other times they're about bringing light into a courtyard, which we're doing for a residential project now, or focusing attention on interior objects, which we've done in other cases. We can work off of the existing shell, perhaps, without even touching it.

In conclusion, what is your inspiration and motivation to work now?

Iwamoto: Conceptually, I am motivated to create things that are surprising in that they are unexpected or non-normative, displaced somehow. I am interested in heightening the perception of an object so that it appears to have shared a transformation into something it might not have initially been. I'm talking about a simple wood wall becoming something that is highly articulated and luminous, or making something that is supposed to be compressed and heavy, like masonry--a vault out of something light, porous, and see-through. I recognize that our tools and their technology allow us to give material and space new identity and I am delighted and inspired at the possibility that this affords for the future.