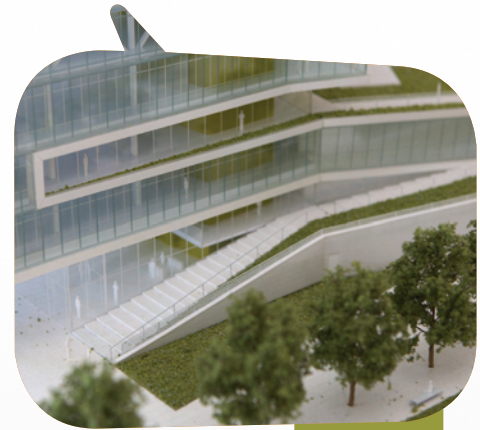


Toshiko Mori

Highlight Video Transcript



How can the use of fabric enhance the performance of buildings?

Throughout her career as an architect and educator, Toshiko Mori has pursued a technical interest in the properties of materials, especially synthetic materials, in addition to her concerns for purity of line, visual lightness and thermal performance.

Toshiko Mori has always taken personal delight in discovering new properties and potentials in materials. Whether designing exhibitions, houses or institutional projects such as the visitor center for Frank Lloyd Wright's Darwin D. Martin House in Buffalo, New York, she enjoys a process that combines intuition with the rigor of research.



In 1804, Joseph-Marie Jacquard invented a revolutionary device. One that could convert a traditional weaving loom – ancient in origin – into a modern, programmable machine.

Like Jacquard, architect Toshiko Mori sees possibility in partnering the very new with the very old. Her vision of the new materials for the fabrication of commercial and residential structures relies heavily on the ancient art of weaving.

Jacquard's work foreshadowed the computer revolution. Toshiko Mori's work is effecting a marriage of weaving and architecture. And helping redefine what constitutes livable, workable modern space.



Upper: Jacquard loom in operation in Greenfield Village. Lower: The Jacquard loom is controlled by punch cards; each row corresponds to one row of the design.

Toshiko Mori Harvard professor, author and new materials pioneer.

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I think one of the reasons and joys of architecture is that every project is different. Client is different. Problem is different. Location is different. So it's . . . the joy of having something fresh. And you start from zero but then you do cumulative studies. 'Cause I'm really a student, a perpetual student. And I think all, every architect is, wants to be a student. Because one is always learning something and that's part of the excitement about it.

Weaving a new vision

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I'm very much interested in weaving as a fabrication process. And in fact, . . . I actually have a book called "Textile Tectonics in Architecture", which I'm working on. And I applied for a grant to do further research next year. 'Cause more and more, I looked at it in terms of material. It's really the future material. It's in medical and also aeronautical as well as in structural. It's really coming to force. . . . It uses materials very efficiently. And it takes weaving as a different patterning to enhance performance. You can change a pattern from one space to the other, so that you can optimize performance. One can give it layers or one can combine different materials.

It's a very ancient technique. It exists in every culture, every civilization.

From traditional to digital

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It can be produced in three modes of production, . . . handmade, mechanical production and also digital production. And because . . . weaving is a binary process, like on and off, electric circuit, the traditional loom can be plugged into a computer right away. And as some of original FORTRAN pattern books are really from a weaving pattern. So there's a really close relationship in which if I can come up with a fabrication process, it can be done by underdeveloped countries, or a medium mechanical production factory, or a highly sophisticated production using computers.



Toshiko Mori.

"I'm really a student, a perpetual student. And I think all, every architect is."
— Toshiko Mori



Model of the Syracuse Center of Excellence, Syracuse, N.Y.

Translating forces

01:22:18; 25

Also, flexibility is interesting. That's another study I'm doing with weaving, which is, technologically speaking, instead of conceiving structure as something static, which resists the force like you have to have a very big column to hold up the buildings, because you're really going against the force.

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Textile has a way to translate forces. So it dissipates forces. Like if you have a light material, because it has fibers, it distributes the forces. And therefore, you don't need as much mass of material to act more effectively in structures. It's called dynamic way of structural engineering. Which means that you can do a much more efficient way of resisting earthquakes, for example.

A very big agenda

01:23:21; 27

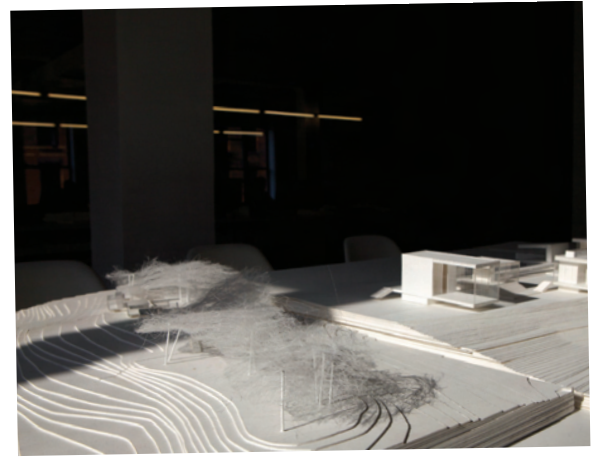
They are already using textiles to protect the houses in Florida against hurricanes. Because it let the winds through and it can be flexible, but it can actually prevent houses to be hit by some of hard materials, like rocks and some flying objects and so forth.

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And also, it could be layered, so that it could be densely woven, layered. It could be waterproof, but it can let the air through at the same time. What I call is multi-functioning properties it can have. And of course it could be highly insular too – meaning to have thermal properties. As well as well as it could be fireproof, . . . so it has an amazing potential.

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And one of the research I'm trying to do is really use a textile tectonics as a new way of fabrication to enhance the performance of buildings. So it's a very big agenda I have.



Model of a site plan

"Innovation is a combination of creativity and imagination. "
— Toshiko Mori



Toshiko Mori's architecture firm is located in a loft in Soho in lower Manhattan.

The power of visualization

03:26:05; 23

Innovation is a combination of creativity and imagination.

03:26:26; 17

And I think for us architects, it's always visualization. And visualizing different circumstances. And all of a sudden, these ideas come together as something innovative. I don't think we're constantly trying to make something innovative. But we are always trying to look for challenges.

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Whenever you actually look at the challenges, one has to go beyond what we already know. You have to push beyond the boundaries. And that's, so in a sense, one is a discipline in rigor. Another one is drive and creativity, imagination. I think those, to me, are ingredients that can drive innovation.



Close up of the Syracuse Center of Excellence model. The building is intended to connect the university and the city.

**Toshiko Mori has a lot more to say.
Visit OnInnovation.com**

to see her full, unedited interview, read the complete transcript
and connect with other visionaries thinking out loud.



Toshiko Mori in front of a model of the Syracuse Center of Excellence.