

# COLOSSAL

"Marilou Schultz Weaves Computer Processor Patterns in Traditional Navajo Tapestries"

By Kate Mothes

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"Replica of a Chip" (1994), wool mounted on wood, 120 x 146.1 centimeters. Photo © Museum Associates/LACMA. Image courtesy of American Indian Science and Engineering Society, shared with permission

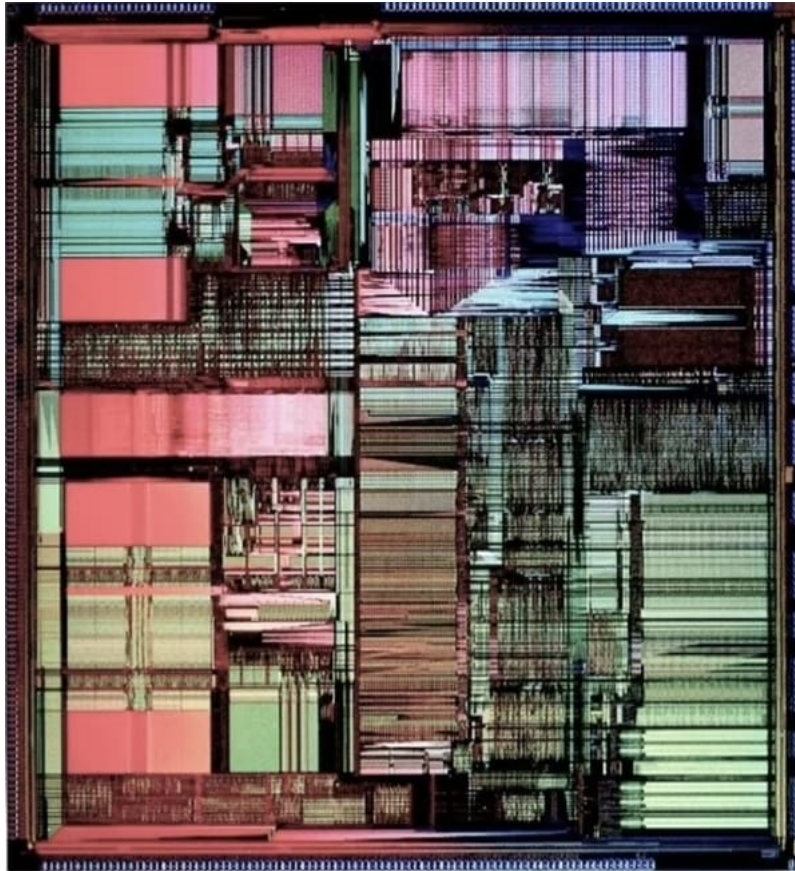
What does Intel's Pentium computer chip have in common with Navajo textiles? More than you might think.

For artist Marilou Schultz, the ancestral practice of weaving melds with an unexpected contemporary source of inspiration. Merging analog loom methods with the patterns found on computer processor cores, Schultz entwines the histories of the Navajo people and modern technology.

In the late 17th century, Spanish colonists introduced a breed of sheep called the Iberian Churro to the American Southwest. The Diné—known also as Navajo—who had lived in the Four Corners region for hundreds of years, embraced shepherding and wool production, eventually developing a unique breed still managed today, the Navajo-Churro.

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Detail of Intel Pentium core processor die

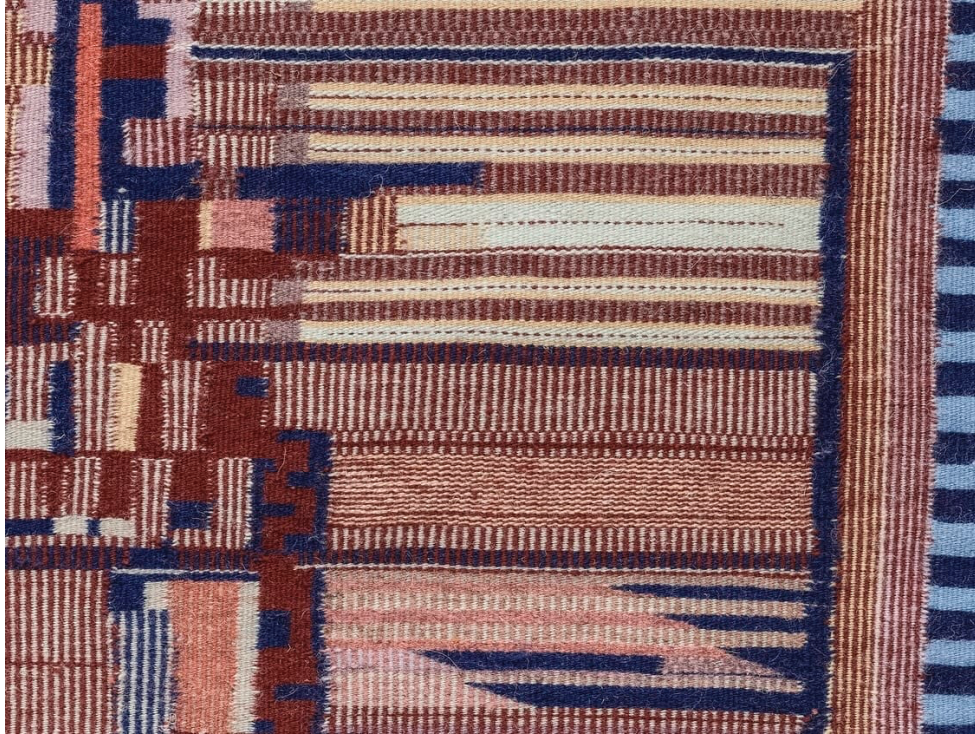
Along with an aptitude for raising sheep, Diné weaving traditions flourished. Anthropologists surmise that the craft was adopted from the neighboring Puebloans sometime in the 12th or 13th centuries. As time passed, Navajo styles and techniques evolved, rising to popularity first among Plains Indian tribes and then, in the 19th century, with Europeans and non-Native tourists who sought out blankets and rugs for their remarkable craftsmanship and geometric patterns.

Schultz, a mathematician and teacher in addition to her studio practice, was commissioned by Intel in 1994 to make "Replica of a Chip" as a gift to the American Indian Science & Engineering Society, an organization still active today that focuses on advancing Indigenous people in STEM. As computer historian Ken Schirriff details in a thorough blog post about the piece—especially its highly accurate layout—the work highlights the alluring patterns of a trailblazing piece of technology.

The first Pentium processor was released in 1993. About the size of a fingernail, the die—the material on which the processor is fabricated—contains more than three million transistors. These microscopic switches control the flow of electricity to process data. Today, some high-powered chips contain *billions* of transistors.

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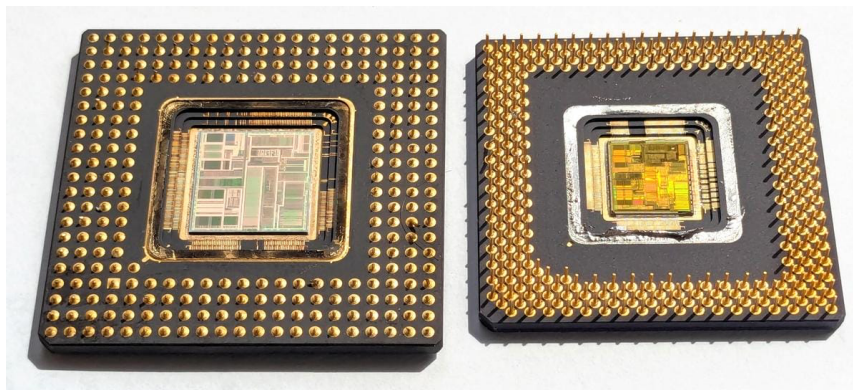
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Detail of "Replica of a Chip"

Schultz faithfully transferred the die pattern to a tapestry, employing delicate loom techniques and working from a photograph of the chip. Unlike traditional Navajo textiles, the geometries in "Replica of a Chip" are far from symmetrical.

She used yarn pigmented with plant dyes, and the cream-colored regions are the natural shade of Navajo-Churro wool. Schultz told Schirriff that the weaving process was slow and deliberate as she referenced the image, completing about one to one-and-a-half inches per day. The painstaking and methodical process of sending warp through weft creates a beautiful tension between the instantaneous results we associate with digital tools today.



Intel Pentium processors

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"Replica of a Chip" was the first in a series of weavings Schultz created based on computer circuits, including one known as the Fairchild 9040. While not as common as the Pentium, the chip was made by the Fairchild company, notable for its employment of Navajo workers in its operation in Shiprock, New Mexico—within the Navajo Nation—in the 1960s and 1970s.

Part of a government initiative to try to improve the economic conditions of life on the reservation, Fairchild was incentivized to open a manufacturing center in Shiprock. "The project started in 1965 with 50 Navajo workers in the Shiprock Community Center manufacturing transistors, rapidly increasing to 366 Navajo workers," Schirriff says. Eventually, the company "employed 1,200 workers, and all but 24 were Navajo, making Fairchild the nation's largest non-government employer of American Indians."

In 1975, the Fairchild-Navajo partnership took a dramatic turn that spelled its demise. With the semiconductor industry suffering from the crippling U.S. recession at the time, Fairchild laid off 140 Navajo employees in Shiprock, which today still has a population of only a little more than 8,000 residents. The layoffs were a blow to the community. A group of 20 locals, armed with rifles, responded by occupying the plant for a week.

While the episode eventually ended peaceably, Fairchild decided to shutter entirely and move its operation overseas, further compromising trust in corporate interests on Navajo land.

Women's roles in manufacturing and assembling electronics are often under-recognized. Schultz taps into ideas around gendered labor, visibility, and the slippery notion of "progress." Through the lens of Navajo history and craft, she addresses paradigm shifts in technology, economics, and social change through the language of fiber.

You can see "Replica of a Chip" in *Woven Histories: Textiles and Modern Abstraction* at the National Gallery of Canada in Ottawa, which continues through March 2, 2025.



Detail of "Replica of a Chip"

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