

THE CONVERGENCE OF HANDICRAFT AND TECHNOLOGICAL INNOVATION: NEW TRENDS IN FIBER ART

by Yue Song

IN the history of art, the evolution of technology and skill has been an important driver of creative development. For handicrafts, technological advances can not only prompt the evolution of art forms but also foster change in artistic concepts and aesthetic values. Fiber art carries the genes of ancient handicraft culture. From knotted and hand-woven fishing nets to machine-fabricated textiles, every technological change and improvement brings not only innovation in craftsmanship but also change in usage and aesthetic value. For example, it was the mastery and maturity of European Aubusson and Gobelin weaving techniques in the late Renaissance period (1520–1600)

that enabled tapestries to depict large thematic painting patterns while growing the status of tapestry in society and later in art history.

Unlike natural evolution, the provocation of technological evolution occurs suddenly, and its changing effect on society and the world is often unpredictable. This is especially true of the technological revolution in the information age. The impact brought about by the combination of art and science has been felt for decades. This phenomenon deserves further examination: What future impacts will technological

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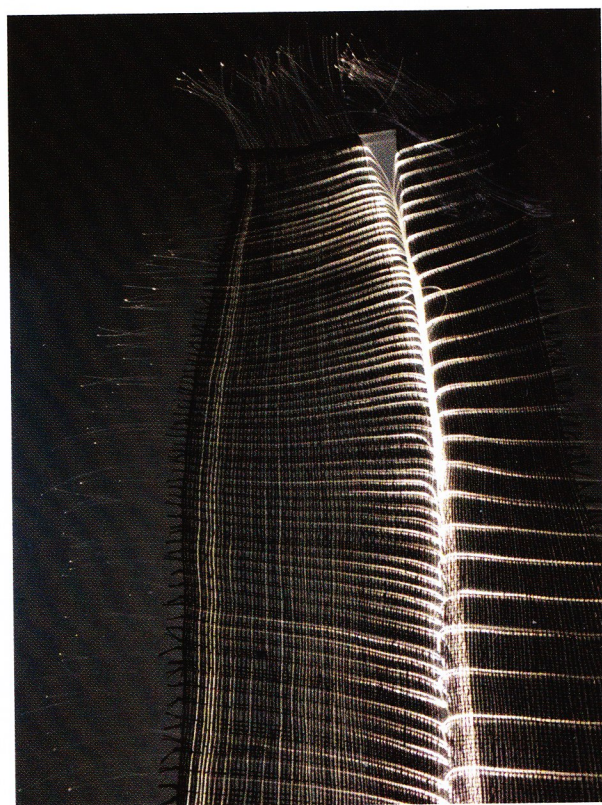
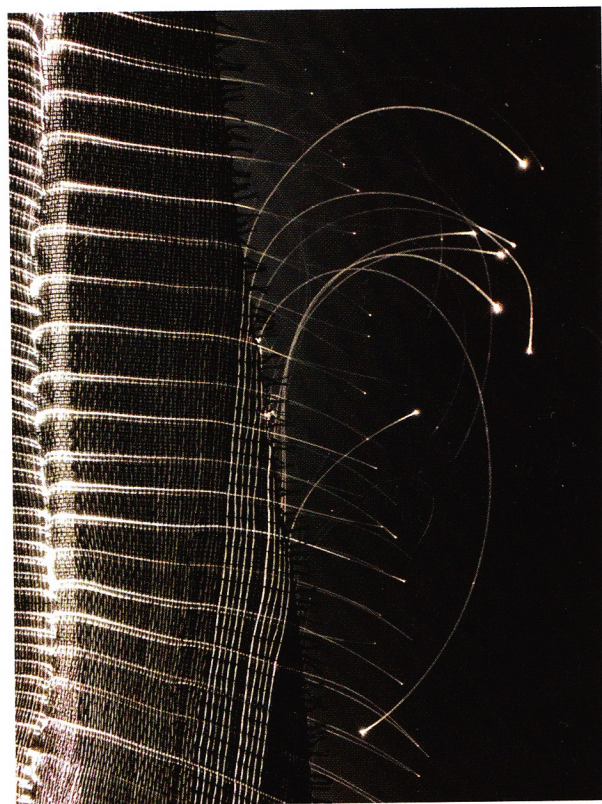
innovation have on traditional hand-woven culture? What kind of development opportunities will be brought to fiber art?

Perhaps “changes” should be discussed on two levels: in the aesthetic experience and in the production of fiber art. In the aesthetic experience, the emergence of new materials has diversified the media of fiber art. Digital media technology, such as imaging reproduction techniques, has made fiber art a comprehensive and experiential art form, shifting from a two- and three-dimensional static aesthetic to an all-encompassing, spatial sensory envelope.

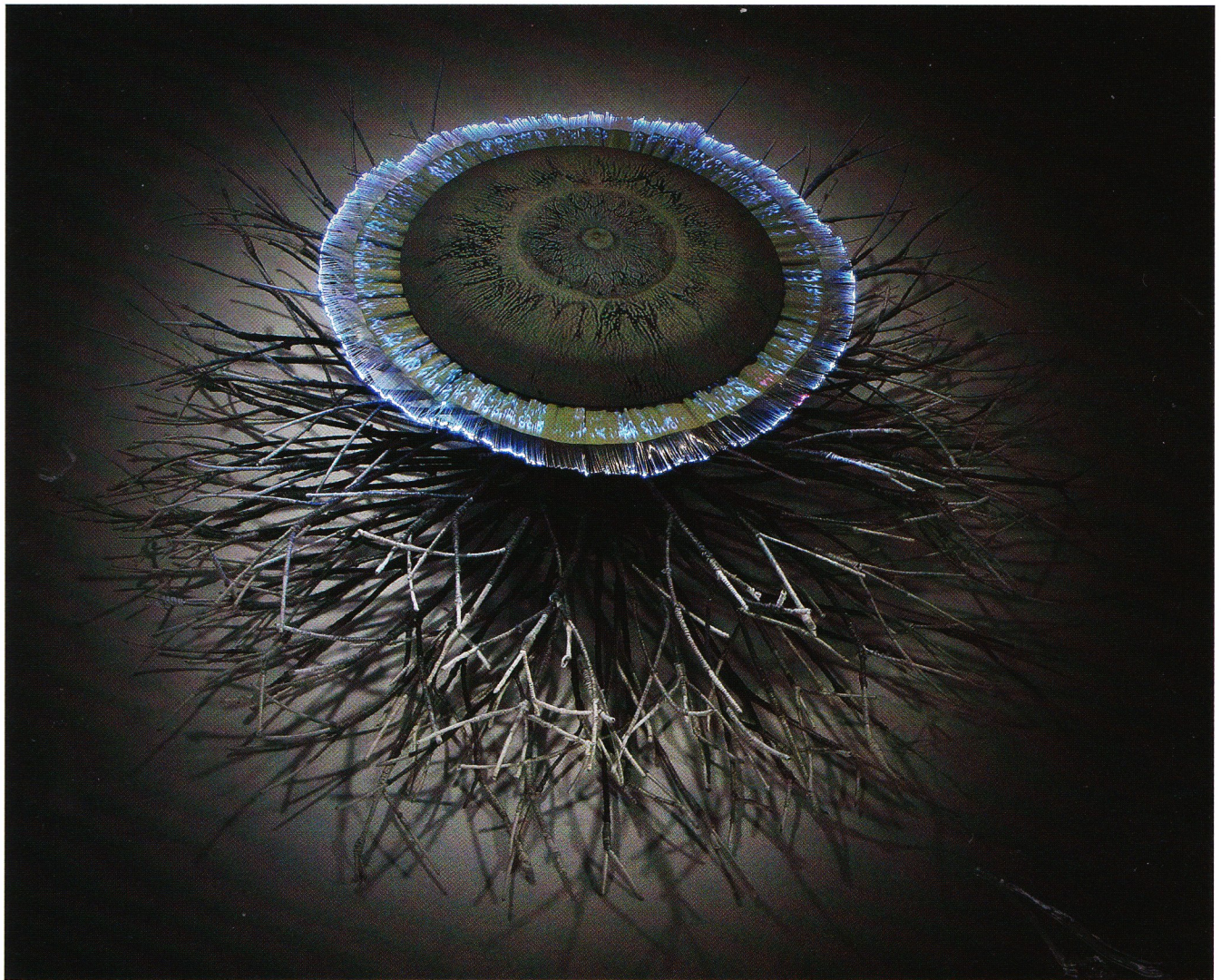
Secondly, in production: traditionally, artisans tended to focus on a particular skill, (the cottage industry of textile production is a good example) but the application of new materials and information technology has expanded to such a level that artists often cannot create independently, prompting interdisciplinary modes of collaboration. I believe this can be a challenge for fiber art, which has traditionally valued independent individual creation and the spirit of handicraft culture.

Take the application of optical fibers as an example. **Włodzimierz Cygan**, a Polish fiber artist, made many early attempts (the last in 2011) to use optical fibers as a weaving material. He filled the old static tapestries with confrontations of materials and changes in colors and light sources by weaving optical fibers into traditional wool tapestries. Cygan’s art breaks the monotony of a simple wall hanging and the aesthetic experience of traditional tapestry art which privileges the visual over a multisensory experience.

Left page: **Włodzimierz Cygan**, *From the Cycle: Tapping*, 2014. Optical fiber, wool, hand woven, 250 x 100 inches. National Museum of China. Photo: Yue Song. Right page top and bottom: details.







Left page and above: **Ren Guanghui**, *Object out of the Pupil*, 2018. Optical fiber, nylon, digital control, laser, 50 pieces, 40 x 40 inches. Photos by the artist.

The birth of digital weaving technology revolutionized traditional hand weaving in terms of output and capabilities. Digital weaving first appeared at ITMA, **Paris International Textile Machinery Fair** in 1999. Digital control printing technology was exhibited for the first time, putting forward the concept of "digital textile," which transformed traditional hand weaving and hand embroidery into mechanical operations informed by digital technology. Artists in the United States, Canada, and the United Kingdom are seeking out modes of coexistence between digital weaving technology and hand-made fiber art culture. We see a change in the way that fiber art is created and produced in the practice of these artists.

This is manifested in the change from independent creation to borderless collaboration.

For example, Contemporary Chinese artist **Ren Guanghui's** optical fiber artwork "Object out of the Pupil" employs both optical fiber and laser technology to render the iris patterns of the human eye through many circular fabrics of different sizes. This work combines optical fiber and laser technology, digital weaving technology and audio-controlled interaction technology. This combination not only enhances the visual perception of the fiber work but also promotes a dynamic sensory experience for the viewer.



Yue Song, *Information-Ecology-Growth*, 2018. Optical fiber, stainless steel, digital control, blacksmithing, 276 x 220 inches. China Science and Technology Museum. Photo by the artist.

Another example includes my work, “Information-Ecology-Growth,” an attempt to apply optical fiber material to the field of public art sculpture. It changes the color temperature of the optical fiber according to time-based programming, forming a harmonious and unified feeling of modern technology with the luster of the stainless-steel sculpture. This work is also an experiment of using optical fiber in large quantities. Alternative materials can facilitate an experience different from traditional fiber, thus enhancing our artistic experience.

The creative work of the American artist **Lia Cook** is typical of the commitment to digital weaving and an enthusiastic exploration of the relationship between science and art. Some of Cook’s early works were made through converting a desired image into pixels, then using flat weaving or double weaving to create the finished work. (Pixilation can also be understood as dotted color layering.) In 2010, Cook collaborated with **Greg Siegel**, a professor of psychiatry at the

University of Pittsburgh in a cross-disciplinary collaboration between weaving, art and science.

Cook explains how she began to use TrackVis software and DSI (Diffusion Spectrum Imaging) of the brain to study a correlation between brainwave communication and physical fabric structures. Cook draws inspiration from medicine, life science and digital science in order to break down the barriers between different fields. With a cross-disciplinary perspective, she examines the combined use of technology and art in the present and explores how textile art can express the sensitive and fragile nature of humanity.

Scientific and technological progress and their application in art have an enormous impact on the existing value system of manual arts. In the trajectory of fiber art, each technological evolution was not subversive nor destructive, but rather a transformative approach that logically led to changes in both

the experience and mode of production. With opportunities brought by new technologies, fiber art can highlight and emphasize the language of art itself, the uniqueness of expression and the aesthetic characteristics of materials. In this way, fiber art can sustainably enhance the vitality of art and ultimately form a new disciplinary path that explores the combination of craft, art and science to achieve creative transformation and innovative development. While paying tribute to traditional handicraft culture, it is beneficial for fiber artists to seek compatibility with technological innovation and explore the theoretical research and creative practice of cross-disciplinary development in fiber art.

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Lia Cook, *Su Series* (installation), 2016. Cotton, rayon, digitally woven, 32 pieces, 16 x 14 inches. Photo by the artist.



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