Tapestries at Magnolia Editions

The technology of mark-making has experienced a rapid acceleration since the turn of the 19th century, due in large part to discoveries and innovations in the field of weaving: a direct line can be traced from the punch-card system of the Jacquard loom and early breakthroughs in color theory to today's computers and LCD displays. Tapestries produced by Magnolia Editions bring this lineage full circle by applying contemporary computing sophistication and lessons learned in the studio to the Jacquard weaving process. Originally called the "Magnolia Tapestry Project" and prompted by artist John Nava's commisison to decorate the vast walls of a Los Angeles cathedral, Magnolia's experimentation with tapestries has matured into a series of groundbreaking collaborations with artists including Chuck Close, Leon Golub, Hung Liu, Kiki Smith, and Masami Teraoka; a look at the origin of the project reveals the additional collaboration of both the powerful computing technology of today and a constellation of innovators stretching back into history.

Kiki Smith - *Guide*, 2013
Jacquard tapestry. 116 x 75 in. Edition of 10

Masami Teraoka - *Tattooed Woman at Sunset Beach II*, 2013
Jacquard tapestry, 115 x 76 in. Edition of 8

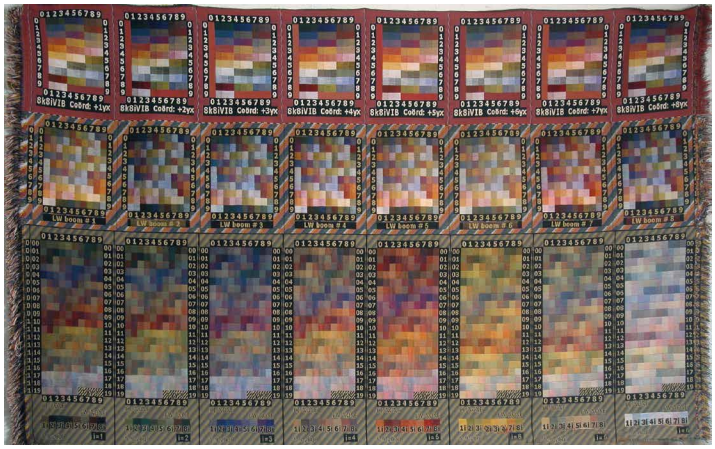
The tapestry medium itself is ancient; for more than two thousand years its popularity has waxed and waned, its status shifting between folk art and fine art, imperial status symbol and industrially produced furnishing, depending on the cultural moment. The process of combining warp and weft threads is a creative module nearly as old as the pigments on the walls of the Lascaux caves; the history of tapestry stretches from Penelope and Odysseus to mass-produced automobile interiors, encompassing pre-Columbian Inca tunics, Egyptian Coptic medallions,

Chinese kesi of woven silk, Navajo blankets, Middle Eastern kilim carpets and wall hangings from Medieval European castles. Egyptian art provides evidence for the existence of looms as long ago as 3000 BC; between the third and seventh centuries AD, tapestry weaving was introduced by Muslim and Byzantine influences in Western Europe, where it flourished in the Medieval period and throughout the Renaissance. Subsequent revivals by the Arts and Crafts movement, the Bauhaus and independent textile artists brought the medium to a 20th century audience. Le Corbusier called tapestries "nomadic murals" for their portability and considered their warmth of color and texture a well-suited counterpoint to his cool, modern interiors.

The Jacquard punch card system, first presented (by most accounts) in 1801, revolutionized the medium while at the same time providing the basis for the development of computer technology in the early 20th century. The binary "memory" of Jacquard's perforated cards was the progenitor of other machines with programmed functions: the player piano, the adding machine, and eventually, the computer. The term Luddite, often used to describe contemporary technophobes, refers to the 19th century textile workers who tried to destroy Jacquard's device at its first unveiling. In the traditional, hand-woven tapestry idiom, also known as discontinuous weft-faced weaving, the weaver interlaces weft threads or yarns through static warp threads. The weft threads do not span the entire width of the tapestry; to place a color in a certain area, a weft thread dyed to the corresponding hue is woven in that area, according to a drawing or "cartoon" placed behind the warp threads. The warp is hidden in the finished product; only the surface weft threads comprise the image. In Jacquard's process, a cartoon of the design to be woven is divided into a grid, which is used to encode a series of perforated cards. A device (now known as a Jacquard) suspended over the loom lifts each individual warp thread by reading these cards. Each perforation corresponds to a single warp thread, such that each weft thread is interlaced either over or under the warp threads depending on the presence or absence of a hole. Unlike traditional hand weaving, the weft threads span the entire width of the tapestry.

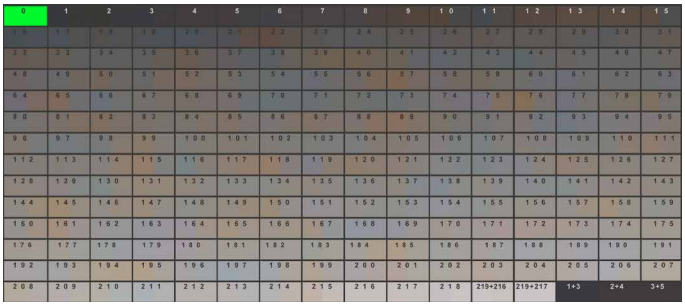
A 2002 tapestry by Ed Moses on the loom in Belgium; the 17,800 V-shaped threads above the loom are controlled by the dual Jacquard head. Photo by Donald Farnsworth.

Typically, tapestries are translated via a process resembling paint-by-numbers: the cartoon is divided into regions, each of which is assigned a solid color based on a standard palette. However, Magnolia Editions uses a contemporary, computerised version of Jacquard's method, whereby the repeating series of multicolored warp and weft threads can be used to weave a complex, mosaic-like network of color combinations that the eye perceives at a distance as modulations of color. This phenomenon can be likened to pointillism, a style of painting in which tiny dots or points placed in close proximity are optically blended as described above. In fact, pointillism originated from discoveries made in the tapestry medium: the style's emergence in 19th century painting can be traced to the influence of Eugène Chevreul, a French chemist responsible for developing the color wheel of primary and intermediary hues.



Chevreul worked as the director of the dye works at Les Gobelins tapestry works in Paris, where he noticed that the perceived color of a particular thread was influenced by its surrounding threads, a phenomenon he called "simultaneous contrast." Chevreul's work, itself a continuation of theories of color elaborated by Leonardo da Vinci and Goethe, influenced painters including Eugène Delacroix and Georges Seurat. The principles articulated by Chevreul also apply to contemporary television and computer displays, which use tiny dots of red, green and blue to render color.

Magnolia Editions tapestries are first previewed on a computer screen: the artist prepares his or her tapestry design by creating a digital composition – manipulating, revising, or combining various elements in media ranging from daguerreotypes, etchings, and charcoal drawings to digital collages. The resulting composition must be converted into a digital "weave file" before it reaches the loom after a color palette – a finite set of available weave structures, based on the thread colors selected for the image at hand – is either assigned or created anew. In the process of developing custom color palettes for a given image – which in the case of Close's black and white daguerreotypes, for example, requires the accurate assembly of 500 shades of woven whites, grays, and blacks – a digital sphere spectrometer is used to determine which optically blended colors will emerge when the threads are combined. Originally developed for Nava's cathedral commission and subsequently refined by Farnsworth with each new edition, Magnolia Editions' method of identifying and assigning woven colors might be likened to a painter mixing hundreds of unique and precise hues via a lengthy process of measurement, calculation, and experimentation, with a host of additional variables such as differing weave structures and the optical interaction of adjacent color combinations providing complications and challenges at every step.

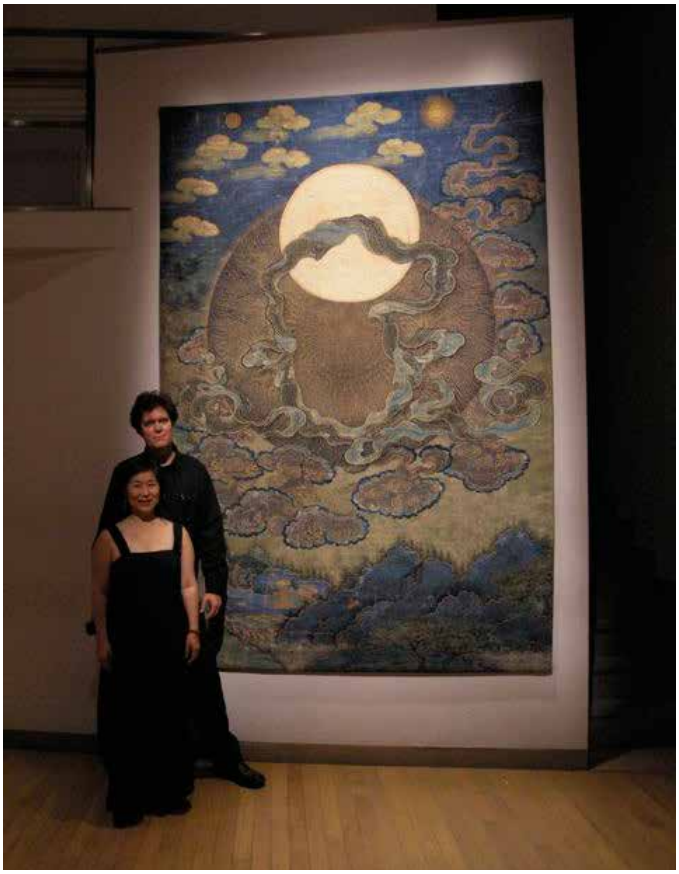


Clockwise from top left: Chuck Close at the mill in Belgium with proofs of his 2011 tapestry *Lucas*; an example of the color palettes used to translate an artist's imagery into weave structures that will optically blend to produce the intended colors; a digital color palette representing the various hues used to weave "black-and-white" images like Close's daguerreotypes; Close at the mill supervising the weaving of *Lucas* and a black-and-white color palette. Photos by Donald Farnsworth.

The completed weave files – bundles of hexadecimal information, each containing an enormous quantity of data to be read directly by the loom – are woven at Flanders Tapestries in Belgium on a seven-foot wide, double-headed electronic Jacquard on a customized Dornier loom, utilizing 17,800 warp threads of repeating groups of either 8 or 10 colors. The loom's warp threads are controlled by 17,800 corresponding electromagnetic lifters which, guided by Magnolia's weave files, rise or fall like the keys on a player piano. These lifters are driven by the most powerful motor possible, housed upstairs in a separate steel superstructure. This "hot rod" loom, in combination with the innovative color techniques developed at Magnolia Editions, opened the door for the revitalization of the tapestry medium.

Despite the myriad difficulties faced by artists at this point in history, the mere fact that ones and zeroes can be sent around the world to direct industrial technology in the creation of works of art suggests that this is an exciting time to be an artist. At the first display in Belgium of works created using this process, a 2001 exhibition at the Bruges bell tower, the president of Dornier mused, "I didn't know our looms were capable of this." Magnolia Editions continues to push the boundaries of the medium, striving to maximize the colors, values, and detail afforded by the loom. In the same way that Tamarind and Gemini put the commercial lithographic technology of the 19th century into the hands of fine artists in the fifties and sixties, Magnolia is putting the electronic Jacquard loom to work in unexpected ways for today's artists. Through the dialogue of historical and cutting-edge mark-making processes, the visions of contemporary innovators can be realized with a precision and technological wizardry underpinned by a perpetual conversation between the past and the future.■

Chuck Close in 2012 with his *Obama I* and *II* tapestries, published by Magnolia Editions as part of a successful fundraiser for the President's re-election campaign.



Donald and Era Farnsworth in 2008 at the opening of "The Missing Peace: Artists Consider the Dalai Lama" at Tokyo's Daikanyama Hillside Terrace with their collaborative 2004 tapestry *Dharmakaya (State I)*. The Farnsworths' tapestry was selected for inclusion in this exhibition of artists from over 40 countries which traveled to numerous museums and institutions across the globe; Magnolia Editions tapestries have now appeared in exhibitions on nearly every continent.