DIGITAL TECHNOLOGIES IN TEXTILE ART

Havva Halaceli

Cukurova University, Faculty of Fine Arts, Department of Textile Design,
Adana, Turkey
hhalaceli@yahoo.com

Abstract: This is a digital age, dominated by information, communication and technology-based entertainment. This age is a result of rapid visual information-sharing. In this age, technology enables video sharing, saving every moment as visual data, and it is a result of rapid visual and information sharing. Today, artists use digital technologies as a means of expressing concepts. Woven textiles are also affected by the technological advances. Textiles have been essential for people from ancient times to now, for covering and protecting themselves from heat and cold. Weaving is a fine art form and a product of labor, including Coptic textiles and European tapestries; it can also utilize the speed, selection and color options of digital technologies that result from the mechanization and technological advances in the 20th century. Computerized Jacquard looms are one of the benefits of digital technologies that enable the weaving of complex imagery by allowing individual warp threads to be lifted.
Today, working with digital cameras, scanners and jacquard looms the textile artist becomes a designer and technology becomes a medium serving the artist's creativity. In this study, the works of textile artists will be examined in view of time, technology and communication.

Keywords: Weaving, digital technology, jacquard loom

1. Introduction

21th century can be called a digital visual era that enables shopping, entertainment, communication and information sharing on a virtual and digital environment. Photos, documents and videos can be shared globally with the facilities of video sharing, webpages (like Youtube), social networks (Facebook, Twitter) and other web media. This has caused changes on social and cultural structures especially on the art scene. Speed has affected almost all places of life; easy access to information and the rapid consumption of the new era have also changed traditional production methods including weaving. Computer aided design has created new visions, especially with jacquard weaving. Computerized jacquard looms allow designers to work with images, either hand-drawn, collage or digital photography, and to create weaves on a computer that are transmitted to the loom via special programs. This paper will address the artworks of textile designers working on hand jacquard looms and industrial jacquard looms.

2. Jacquard weaving

The Jacquard loom is a mechanical loom, invented by Joseph Marie Jacquard in 1801, that simplified the process of manufacturing textiles particularly complex patterns such as brocade, damask and matelasse [1] [2]. The Jacquard loom was the first machine to use punched cards to control a sequence of operations. The ability to change the pattern of the loom's weave by simply changing cards was an important conceptual precursor to the development of computer programming. Jacquard looms give the designer the opportunity to create complex images on a mechanized loom instead of using hand-controlled methods such as pick up weaves and tapestry or labor intensive drawlooms. Jacquard looms are used especially for image-based expressions and the artists using these looms have a natural

affinity to individually controlled threads. Transforming a photographic image to a textural surface creates a tactile experience between the viewer and the art piece. Nowadays many artist and designers use jacquard looms in their private studios, schools and art centers. In this context, a new generation of affordable looms with new names and innovative technologies are found in the art departments of many universities and textile artists'studios. Often this new generation of loom is used as a tool for creative expression rather than to produce functional textiles [3] TC-1 and AVL looms are examples of hand jacquard looms.

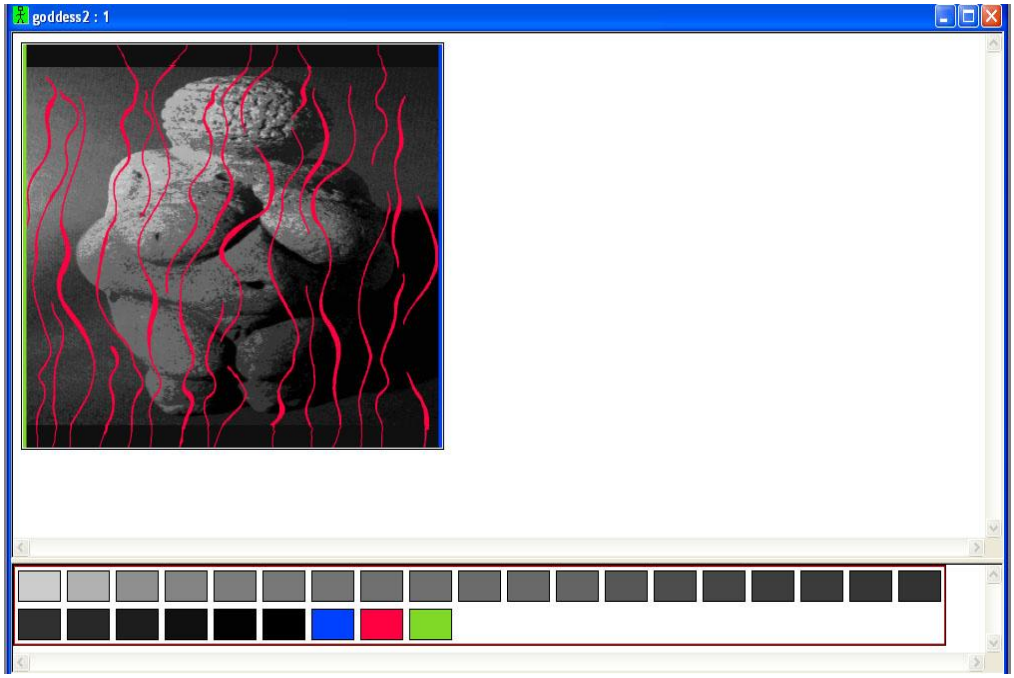

Figure 1: the combination of a scanned image and a drawing on pointcarre program

Today, computerized jacquard looms have the potential to produce new artwork and interpretations, allowing artists to combine their sensual potential with digital technology. Design programs such Photoshop and Pointcarre provide artists the ability to make selections from various programing options so that their creativity may evolve. Many possibilities can be rapidly tested at the touch of a button, including changes of form, background, foreground, color relations and scale, giving the artist more time to devote to the content, meaning and communication of ideas [4]. The designer chooses weave structures for each color so that the image gains a tactile characteristic. This is a process in which image turns into weave structure and that in turn, results in texture. Computer aided design programs allow rapid simulation of weave, color and yarn. Different color and weave combinations can be seen on the computer monitor and transmitted easily to each warp thread.

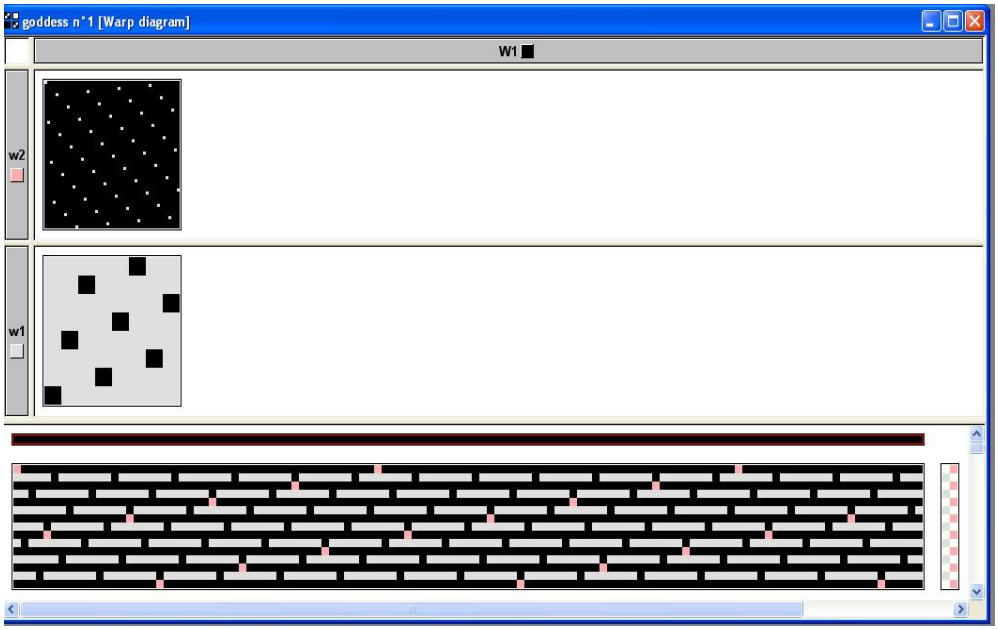

Figure 2: Weave structures on pointcarre

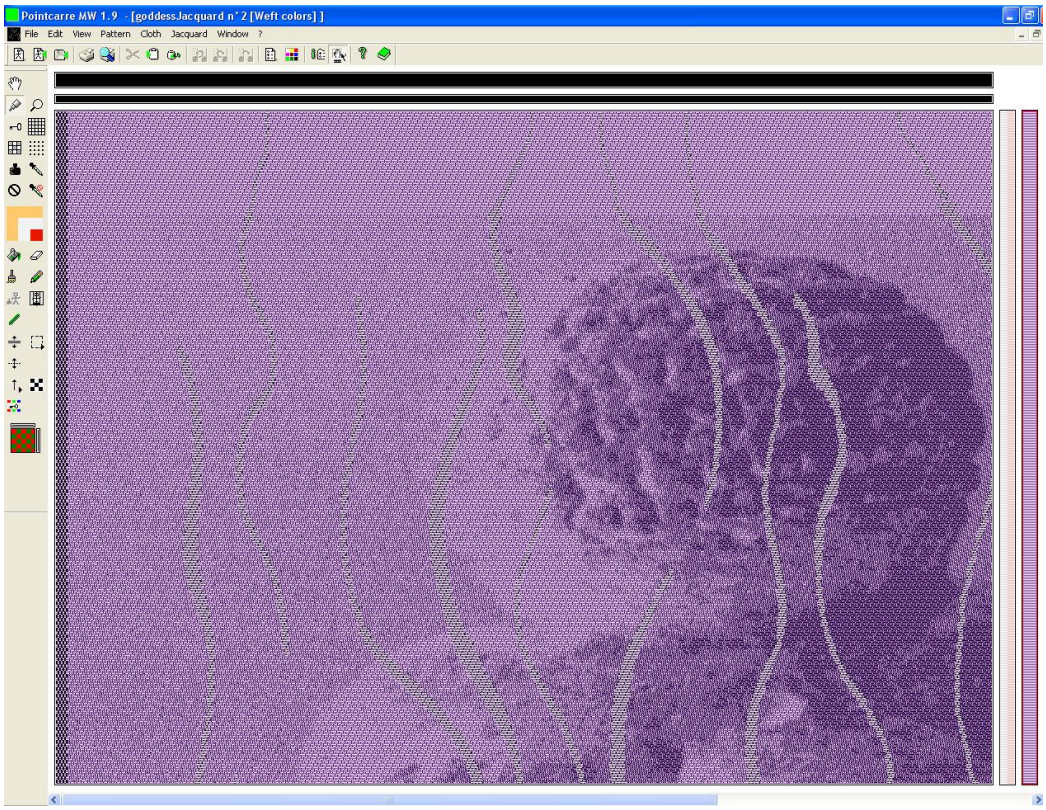

Figure 3.:Simulation of weaves

Figure 4: Twiggy-Venus, handwoven on jacquard loom, Havva Halaceli, 2008

With this figurative and complex image making capacity, " be it nature or urban-inspired the use of the computer opens up a whole new arena. The computer-generated image can deal with many types of input for example, the bringing together of the hand drawn, the photographic and the digital. Indeed, some imagery might be totally ephemeral existing only on the screen and not in the physical world at all-the truly digital as concept."[5] The subjects of digitally woven textiles range from time and history to relations and family. With the ability to scan existing pictures into computers, artists can address their origin and family stories on their digitally woven works.

Beside the designing capacity of digital technologies, there is the potential for textiles to be designed and woven in different locations. The designer can create on computer aided design programs and send the design file via e-mail to the weaving mills. After the weaving process is completed the artworks can be even exhibited in virtual spaces.

From the speed point of view, digital technologies shortens the time for weaving process compared to tapestry weaving. A piece can be woven in a few hours on a jacquard loom that might take years being woven on tapestry looms.

Bethanne Knudsob stated the advantages of jacquard looms as: "change of scale, speed of execution, level of control editions and iterations are expedited by the computer and by the electronically controlled weaving machine [5]."

2.1. Design Steps On Jacquard Loom

Design steps in jacquard weaving process starts with inspiration and it goes on with

- Sketch, development of art (or scanning an image)
- Design in repeat (no repeat for wall hanging)
- Transformation of design into point paper draft
- Definition of weaves structure
- Sampling
- Modification and/or correction of design and or weaves
- Transmission of warp action to loom
- Production of finished textile [6]

The first four steps are executed on computer. The production can be done on industrially jacquard looms or hand jacquard looms. On hand jacquard looms the artist can pick the wefts manually and add his individual touch on the woven work.

3.Artists

Artists choose to weave either on hand or industrial jacquard looms according to their design, speed and method of expression.

Manual picking enables the artist to create a human mark on the technology on weaving. Bhakti Ziek stated that she especially likes working on hand jacquard because anything she can do on a floor loom (like paint warps, or brocade, or use fine threads and thick threads in one weaving) she can do here, plus she gets to play with weave structure and imagery with no boundaries [7]. Grethe Sorensen, also stated about the importance of hand weaving on jacquard loom that "… the coincidences that happen while playing with materials and constructions are invaluable and cannot be replaced by computer screens…Even though computer - programs may be able to visualize anything you can ever dream of constructing, they will never have the sensuous knowledge of hands [8]."

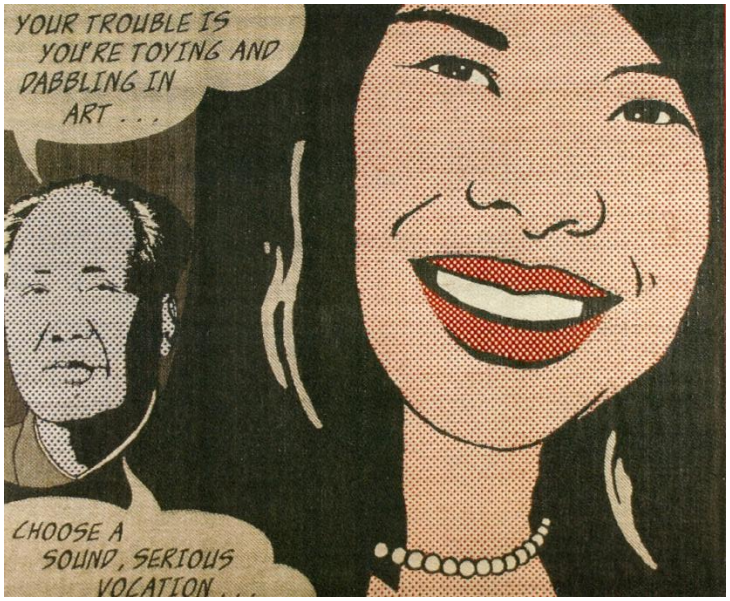

Figure 5: Pop art: dabbling in art, Lisa Lee Peterson, hand-woven on a computerized jacquard loom, 2006 [9]

Figure 6: Handloom and powerloom versions . Jannice Lessmann Moss.. [10]

Figure 7: Bethanne Knudson,[11]

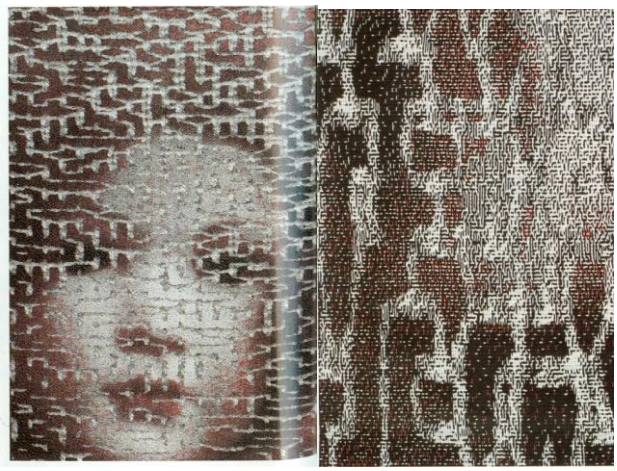

Figure 8: China Maze doll (with detail), Lia Cook, 2008 [12]

Figure 9: Bhakti Ziek, [13]

Janice Lessmann Moss uses digital technology as a medium to make statements about the digital age. Digital tools have become both the context and medium. Moss's inspirations of time, moment and movement are interpreted both on handloom and jacquard power loom.

4. Conclusion

Both manual and industrial jacquard looms are in service of textile artists. Artists will utilize their speed and alternative selection capacities and will continue to encounter new digital concepts. Even as digital technologies become advanced and digital medium may become the subject of the artwork, the only true decision maker will remain designer.

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