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Jacquard art weaving : an inexhaustible process of exploration

Louise Lemieux Berube

INTRODUCTION :

This presentation will survey my concern and my evolution in weaving, before and with jacquard weaving. I will explain how images are transformed, from the photographic documents to the finished textiles. And finally, I will present some jacquard works that are significant for the development of this field.

1. THE COMPUTER BEFORE THE JACQUARD

I continuously worked to develop a specific approach combining the theoretical principles of weaving with my interest in abstract art with a specific interest in color blending, or color separation, color juxtaposition.

Images before jacquard were not so important to me, they served as a tool to experiment on color blending, on material, on weave structures themselves.

I would compare my approach to other art field experimentation, like ...

Color mixing in pointillism was more important for Seurat than the image itself,,

Or when welding became accessible to Sculptors,

Or when painters experimented with knife painting, instead of a brush ...

My first steps in computerized weaving (1983) : were extremely need - I was then confronted with the impossibility to use a multi-harness loom at it most efficiency.

There were two or three problems :

- there were tremendous difficulties to memorize a long and complex treadling
- I was suffering from the enormous weight need to lift multi-harnesses when weaving multi layers fabrics
- There were tremendous limits in the construction of specific designs or variety of designs with specific weave structures.

I came to a point when I had two choices : either stop weaving and do something else or get the proper equipment and continue. It meant getting new technology, computerized loom and a good software.

2. PUSHING THE LIMITS OF HARNESS LOOM WEAVING

There were about 10 years of multi-harness weaving before jacquard became available to me

During that period, I research on how to push the limits of harness loom weaving. I develop a profound comprehension of complex weaving, using layered structures,

different yarn size sometimes for each layer. I created designs that were very close to those used in jacquard weaving, or that could be taken for jacquard designs.

I develop a general approach, a method of designing for weaving, a method that could be used for almost any design or weave structures.

The use of a professional software (Pointcarre) made it easier to study, research and develop this innovative method for designing woven textiles.

And I wrote a manual (unfortunately for the most of two, written in French)

But all this was not enough for my hunger for more freedom.

3. THEN CAME OUR FIRST JACQUARD HANDLOOM

We needed a handweaving jacquard loom, with the largest repeat as possible. And we made it possible.

About five years ago, we initiated a collaboration between AVL (a well-known loom maker company) and TIS (a Lyon based industrial jacquard head makers).

They came up with :

- A handweaving loom
- 1728 hooks (warp threads) completely independent from each other, meaning a full repeat design from selvedge to selvedge
- an adjustable width and density for the warp.

It was all we needed !

An extraordinary adventure started : research, teaching, developing a network of jacquard weavers,

Having a computerized loom at hand permits :

- testing the theoretical principles of weaving I was developing
- going faster in developing a collection of works
- having instant results - thus permitting instant adjustments to designs, to weaves, to yarns ;

The most important REVOLUTION was the possibility to use free designs, photographic images with all the weaves we want : it is a great opportunity for us handweavers. I would say it is bringing a revival for handweaving, art or design.

4. AN INFLUENCE ON MY OWN ARTWORK

I was so happy ! I wanted in my first series of jacquard work to please myself and my audience, to enlarge my audience.

I still have fresh in my memory, the souvenir of the opening of my first exhibition with jacquard works. There about 20 large scale woven works, created and grouped with to other art field : photography and contemporary dance. And there was an unity among the three art forms : each one was important, each one was supporting, and in harmony.

To enlarge my audience and with these new possibilities the question of Edition came up front. I decided to offer my works in small edition, if there was an audience for them. I sold 5 to 6 editions of two of the artworks from this first series : Joe, La La. (See Fiberarts Design Book 6 for images).

It can be argued that the value of the artwork is changed when produced in editions, but it brings with it an important accessibility for the audience. La valeur monetaire is changed a l'unite, mais le total des ventes a compense.

5. MORE RESEARCH

Until now, and it is so recent, most of us, jacquard handweavers, have been using until now one or two color warps, standard materials (coton, linen or silk). Now that the first generation is over, we are questioning ourselves again about material, texture, colors..

I have recently develop a research on color weaving for jacquard .- it was most satisfying last june to share these information with a dozen of jacquard weavers - what I first called a TAPESTRY warp, but what finally became a multi-layer, multi-color warps for complex structures in order to develop different weave and color effects.

My future research will include a research on different material , different size materials in different layers ...

Our Centre will have an Atlas of 4,000 weave structures to become a reality ... woven, that we can touch, feel and discover.

6. WHAT IS JACQUARD WEAVING, HOW IS IT MADE ?

Le procode : from a scanned image to the cloth

Step one - Scanned Photos at different resolution -and computerized designs

Step two - Reduction of colors

Step three - Choosing the rightweave structures

Step Four - Finishing : correcting the floats,

Step Five - Preparing selvages (harness tie) and transferring to the loom.

Step One: Scanned Photos at different resolution -and computerized designs

A design may be made by hand on paper and then digitized, just like a photo.

A design may be made directly on the computer using different softwares (e.g. Illustrator, Painter, Pointcarre, etc.).

A photograph can be scanned.

All these can be worked together in one single project or be a project in itself.

Some images may be more difficult to digitize than others ; sometimes original images are of poor quality or lack precise outlines.

When images are digitized, their resolution is linked to the number of threads per centimetre (or inch) during the weaving process and also depends on the size of the image. The finished size of a digitized image must correspond to the total number of threads in the woven version.

For example: the loom at the Montreal Centre for Contemporary Textiles has 1,728 threads (or hooks), which are usually beamed at 40 threads/in. If you wish to weave a full-width image, then you would digitize the original image so as to obtain a size approximating that number.

Of course, this also depends on the size of the image that you are digitizing. For example, if you are using a slide, which is usually small, you must increase the digital resolution. Therefore, it is important to produce a digitized image in the size corresponding to the total number of threads in the woven version of the image.

Digitization is done in colour or grey shades, depending on the type of weaves being used.

For monochrome effects, using satin or twill weaves, it is better to digitize in shades of grey. When using tapestry or colour-effect weaves, it is better to keep the dominant colours when digitizing.

Variations could be given to photographic images, like using different filters in different software (Photoshop, for exemple).

Step two - Reduction of colors - cleaning up the images

The number of determines the number of different weaves for an image determines the number colours of the same finished. Each colour will be replaced by a different weave structure in a given area.

Once the image is digitized, we have to start cleaning up the image in order to reduce the number of colours, according to the number of weaves that will be used.

The digitized images are made up of many small coloured (or grey) dots spread evenly over the entire surface of the image. You can see this by enlarging the image, like looking at it through a microscope. To be able to interpret these images convincingly, we must

group the colours together-more or less clump them together-so that a colour is made up of only one tone (instead of being made up of several colours at one time). Isolated or dispersed dots have to be eliminated.

Each colour in the design represent a weave, regardless of whether this colour is included in a specific area of the design or dispersed among several areas.

Sprayed colors have to be used very carefully. If the various coloured dots are scattered within a coloured areas of the design, the main weave in this area will be blurred by scattered raised threads from another weave. This makes some weaves unrecognizable, because the raised threads belonging to another weave are scattered. Nonetheless, these areas may be of interest if you want to explore texture and create mixed effects.

Step Three - Choosing the right weave structures

When all the cleaning is done, it is time to assign a different weave to each solid colour. If complex weaves are used, a larger number of colours could be possible in the final image.

Theoretically, any weave structures could be used, but they will not all serve at best a specific design. One has to know something about weave structures at this point and which should be used to emphasize the desired result.

I must say that at this point, the textile artist must have a comprehension of the weave structures. A scientific and artistic profiles must be in symbiosis.

Replace each theoretical colour in the image with a simple or complex weave. They can be found in an on-line library of weaves or in a personal library stored on diskette ; new weaves can be created at any time, especially layered complex weaves..

Weaves are chosen to achieve the best effects in texture, colour, contrast, shading, fabric strength and thickness, etc.

Step Four - Finishing : correcting the floats.

At any time when choosing the weaves, a woven display of the image is accessible. It permits to either change details in the image, or change weave structures.

When the weave structures are all assigned, it is time to check joints and correct too long floats.

When the fabric drafting is displayed, we must check the areas where two different weaves meet. This involves the relationship between the dimensions of the weave repeats and those of the design repeats.

The repeat of all selected weaves must be a multiple of the dimensions of the design repeat and the design repeat must be a multiple of the number of hooks available.

Good textile software will also allow you to verify and correct the maximum length of all floats almost automatically, regardless of whether they are located in the warp or the weft.

This length is determined according to the fabric's desired density, resistance to friction and ultimate use. This information can only be obtained through actual sampling.

The software will then use a flashing signal to display all floats that surpass these limits and may appear in places where two weaves meet side by side on the borders of the motifs and designs. These floats may be corrected automatically or by hand, in areas where design contour precision is crucial.

Simulation allows you to see both sides of the fabric on screen and in actual size, no matter what threads or weaves are used. At this point, a simulation on the screen of the finished textile, with exact counts in warp and weft can also be made.

Step Five : preparing selvages (harness tie) and transferring to the loom.

One of the last steps involves incorporating weaves for the selvages. This operation, known as harness tie, allows the fabric to be woven in a regular pattern on each side of the weaving.

The computer drafts selvedge weaves automatically. Simply choose the weave desired and the number of threads to be assigned to it.

It is now the time to save those technical informations in a format that can be read by the loom computer. Once all the information is transferred to the loom computer, the actual weaving is ready to start.

7. MORE JACQUARD WORKS

The Montreal Centre for Contemporary Textiles has organized a Jacquard exhibition, called e-textiles, Ventures in jacquard weaving. It will travel in Canada (Halifax, Fredericton, Toronto and Vancouver) and Australia.

We will show the works of 11 artists

From Australia : Liz Williamson

From Japan : Junichi Arai, Hideo Yamakuchi

From United States : Lia Cook, Emily DuBois, Laura Foster Nicholson, Cynthia Schira, Bhakti Ziek

From Canada : Frances Dorsey, Louise Lemieux Berube, Ruth Scheuing

To serve as the catalog of the exhibition, we have produced a Cdrom that contains much more than the exhibited works :

- a virtual gallery with more than 40 other jacquard works from various places in the world,
- two essays (one from Margo Mensing from Skidmore College, Saratoga Springs, NY, and one from Barbara Layne for Concordia University in Montreal).
- a section on jacquard history and process.
- And finally a section on our Centre and the services we offer to professionals and artists.

This Cdrom will be distributed after the opening of the exhibition on November 8 at the Museum of Contemporary Art in Montreal.

See the CTCM website to know more about it : www.textiles-mtl.com

Louise Lemieux Berube
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