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## Artisanal Textile Manufacturing

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**ARTISANAL TEXTILE MANUFACTURING****BETHANNE KNUDSON**[bethanne@TheJacquardCenter.com](mailto:bethanne@TheJacquardCenter.com)[bethanne@TheOrioleMill.com](mailto:bethanne@TheOrioleMill.com)

My life as a college professor ended in 1996 when I took a job editing patterns, on a Macintosh computer, using Photoshop. Five months later I was hired as Training and Technical Support for a computer aided design system called *JacqCAD MASTER*®, used to design Jacquard woven textiles.

From 1997 to 2000 I traveled to mills and design houses, training designers on *JacqCAD MASTER*®. In many months I traveled three weeks out of four. I would depart each Sunday and return late on Friday. I learned a great deal, training individuals in their working environment, mills or design houses located primarily in North America. We could take a file from the office to the weave room, to test. However, the mill environment is not conducive to training.

First, as mills are not set up with training rooms, we would crowd around a single computer or sit in a dark room looking at a projected image. Students need to see what the instructor is doing, but they also need to use the software on their own computer during instruction. It simply could not happen that way on site at a mill.

Second, interruptions were frequent, distractions many. A designer, on site, can be called away by management at any moment, creating not only that interruption but the need later, when she returns, to repeat the instructions the other designers had received. Having taught on the college level I was accustomed to controlling the learning environment and having no outside interruptions while lecturing.

The solution was to set up a training retreat. Let the designers have the luxury of full immersion training in an environment that supports learning. No interruptions, no distractions, access to examples and demos, on equipment that is well-maintained. In 2000 I founded The Jacquard Center, a training retreat for Jacquard Studies, in Hendersonville, North Carolina. It is also the training facility for *JacqCAD MASTER*® software. This created the class atmosphere I could not establish at mills.

Students live at The Jacquard Center, where they have access to a fully equipped kitchen, dining room and living room. Each has a private bedroom with its own bathroom, a luxury everyone appreciates. They can be—and are—found at the computer in the training room at all hours.

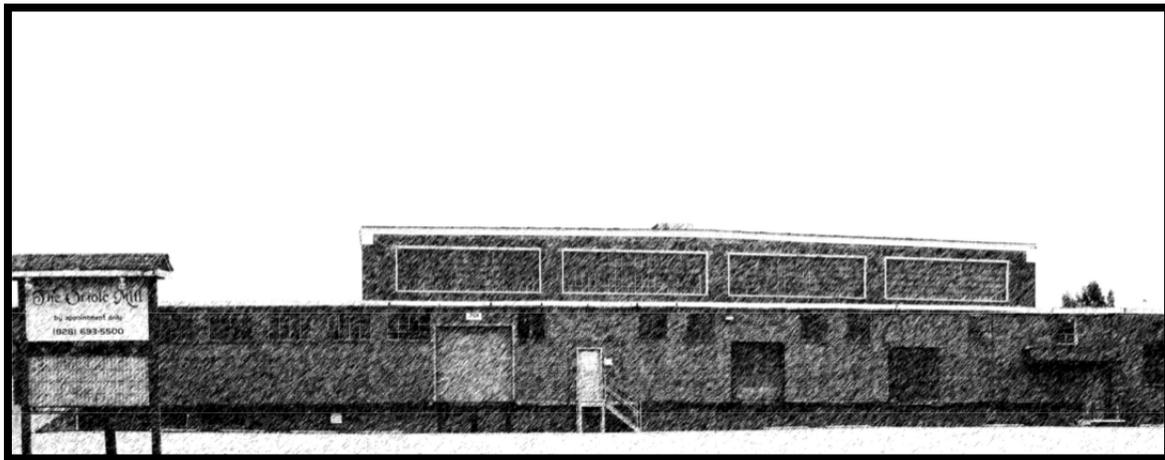
Now the missing piece became access to Jacquard looms, the one advantage the mills did have. I found two friendly mills in the area, each within 30 to 45 minutes drive. We could design in the class, and weave at the mills. This was a great opportunity from which many artists benefited. However, friendly though they were, these other mills had serious limitations for us. We had to accept their setups, their yarn quality, their employees and their poorly ventilated, overcrowded weave rooms. And we had to go there in a group and get to weave just once. We were interrupting the mill's normal activities.

Over time, access to the mills we were using became more problematic. The mills reduced the quality of yarn, cutting their costs via poor quality yarn that would pill in the first washing. We lost the open access as management changed. They knew we had been allowed to weave there, but no longer saw any advantage to their facilities to let us use them. And we saw the limits of the once-only batch trip, compared with the dream of testing a design, making adjustments to improve the design, weaving again,

adjusting, and weaving again and again until everything was exactly as desired.

In 2002, Stephan Michelson and I began the search for a site to put one or two Jacquard looms. We saw this as a natural complement to the success of The Jacquard Center and as a resource for designers and artists. For those attending classes at The Jacquard Center, being able to train on the software and test a weave file the same day expedites the rate of comprehension. For the commercial designers, easy access to weaving for research and development is needed. In many mills it is not possible for the designer to be present when a new pattern is sampled. This is a source of frustration to them. Thus, the combination of The Jacquard Center with a mill would serve all interests, from beginner to professional. The other mills were correct that our weaving there served no interest of theirs. We needed a mill that saw this activity as part of its mission.

Here's how it goes at a typical, large, American mill: The designer sends a file with a sample request to the weave room. Weeks pass. The sample is produced. The designer revises the file and sends it for weaving. Weeks pass. Multiple iterations take multiple months. Under our vision of an integrated training center and mill, we could produce in one week what might take three months at another mill. We are small. We are flexible. We are fast. And weaving samples is seen as part of what we do, not as an interruption.



*The Oriole Mill, illustration by Bethanne Knudson*

We bought our first loom in 2004, and then stored it. In 2006 we finally purchased the building that would become The Oriole Mill. Renovations to the building's roof, electrical, heating and cooling systems, and much more, continue to this day; but the initial thrust to get the building functional (and, except for us, empty) took two years. We wove our first yard in 2007. We have nine Jacquard looms, five of which are set up and running.

As we began buying used equipment it became clear that our original plan—to buy a few pieces of equipment at a time, over time, as money came in—could not be effectuated. The American textile industry was collapsing too fast. In previous years, buying one or two machines at a time from the used market, made sense. That's how used equipment came into the market. A few at a time as mills upgraded and sold their older, slower looms. Now entire plants were being sold -- every piece of equipment being sent overseas to a single buyer. We knew the equipment that left would not be coming back. We had to move fast. We had to buy all that we thought we would need within what we (and a cooperative bank) could afford. The plan to avoid taking on debt vanished. The opportunity to buy a few pieces at a time was diminishing rapidly.

Plans are a starting point. Without flexibility and an open mind, most ventures will fail. One cannot know in the beginning exactly what will prove to be the successful approach. We have said yes to anything that makes sense for the long term. Nine out of ten things will yield nothing. The tenth may take months or years to germinate.

Not everyone with weaving experience has expertise. Not everyone is well suited to a role in a start up. Some folks need the simplicity of 40 hours of a single task, week in and week out. We hired people with excellent credentials, but discovered they had no ability to function within the context of a small, loosely structured start-up.

In USA mills, supervisors for weave rooms are trained in management, not in weaving. Their job is to record numbers that find their way to management spreadsheets, to discipline workers, and to push them to work faster, to monitor the number of breaks they take, the number of times they use the bathroom during a shift. Think how much more the workers have to produce to pay those supervisors' salaries. We have talked to workers of closed mills who, correctly or not, point to the layer of supervisors and managers—who may contribute nothing to making cloth—as the reason the mill failed.

We consider the management structure of mills to have been a contributor to the industry's decline. We have no supervisors. Someone has to set priorities, but once they are known our workers organize themselves to fulfill them. If a worker is unwilling or unable to do his job he should be given training, reassigned or fired. This may sound harsh, but the opportunity to work in an environment that respects and rewards its workers should go to those who appreciate what that means and want to be a part of making it a success. It took a year and a half and three crews before we got the crew we needed. We simply would have had no chance of surviving with the people we hired at first. Now we thrive with a competent, self-directed, hard working crew.

A more general lesson is this: Once a problem is identified, the solution needs to be applied sooner rather than later. Most problems are not self-solving. Thus the role of management—Stephan and myself—is to help the other workers do their work. Our job is to solve all the problems around them by providing good quality equipment, fine natural-fiber yarns, adequate ventilation, as much light as they need, as much of it natural as possible. We stress cleanliness of the environment and maintenance of the equipment, and we provide the time to accomplish it. We see little evidence that other mills take this approach.

In The Oriole Mill, each employee has his or her own area of responsibility, and everyone works with everyone else, across departments. In that sense every employee is a supervisor at times, and is supervised—I would say, directed—at other times. Titles have fallen away. Yes, we have a highly skilled over hauler, but he may be tying in a warp at some point, or working in the finishing department at another point. Our warping specialist may be found sewing or running a loom. Flexibility and cooperation are essential. The industry, as it had been managed before, had no room for those concepts. The variety in a worker's day helps keep employees interested and we are careful to share our vision of what the product will be with them, so they can contribute to its production. Our mill-workers all interact with students and design professionals who weave at the mill, through The Jacquard Center. It is an interesting place to be. We also believe in paying a living wage, and in sending people home when they are sick without loss of wages. We believe in seeking quality across the board -- from quality of the working environment to the quality of yarn and fabric design to the people we employ.

Thus, our first management lesson was importance of getting the right people which takes effort and patience. We were gratified to find that such competent, flexible people exist, but not surprised to find

that not one of our employees was working in the textile industry when we hired them. They had all left in disgust.

Our second management lesson—or at least how we work—is something I mentioned above: We say yes to nearly everything we can while knowing that there will be many times when our time is not compensated directly or immediately or at all, ever. This is not a cynical statement. It takes time and money to make money. Any management school will tell you to manage time by focusing on those activities most likely to bring the most benefits. That makes some sense, but also misses many opportunities.

We have been ripped off many times by people saying they would represent us, show our wares, and provide us with orders. We have taken whole days to make presentations to a promised audience of what turned out to be at most five people. But then, every once in a while, we meet a person who brings something new to the mill. As we can never predict which experience will turn out profitable, which new contact will turn out joyous, we agree to as many as we can. For example, we give public tours whenever any group forms to request them. When we are asked, at the end, where tour members can purchase our products, we direct them to local stores. Some of them do go there, do purchase. We have never calculated if this is a “good” expenditure of our time. It is simply part of how we manage the mill. It is who we want to be, and so it is who we are.

As we met other mill owners, some who work very hard, some who do not, we found one characteristic that most distinguished them. Some see their mill as a place to make fabrics. Others see it as a place to make money. It is this latter attitude that led to the poor labor relations and ineffectual worker structure in the traditional textile industry. If the mill is where the owner makes money, then he is likely to see workers as taking money out of his pocket. This attitude means that workers and management have opposed interests. If, on the other hand, the mill is where people come together to produce beautiful fabrics and products, then the workers are contributors, putting money into the owner’s pocket. Management and labor are on the same side. Our view, of what type of people workers must be to fit in, is part of our view of who we are and why we are here.

Thus we can articulate the mission of the combined Jacquard Center and Oriole Mill:

- Think tank for all things Jacquard and most things woven
- The go to place for research and development, for innovation
- The go to place for bespoke projects
- The go to place for the entrepreneur and the artist
- The producer of exquisitely designed and manufactured heirloom quality fabrics

Another lesson taught by management schools is to have a single focus. Express your mission statement in no more than seven words. Again, we disagree. All of these goals remain important. Yes, this is my business, but it is also my life. Humans are complex. A seven-word goal cannot encompass the mission of the combined Jacquard Center and Oriole Mill.

So how does this work? We are trying to figure that out. It takes the same amount of time to prepare a file that will weave for one yard as it does to prepare a file that will weave 100,000 yards. Historically, design and sampling time was absorbed in the cost of production -- high volume minimum orders could absorb the R&D. Without the high volume, absorbing the R&D that way is nearly impossible. We have to develop new models, new working and pricing strategies.

On a daily basis, we produce our own line of products. We control the design, the yarn, the weaving and

the finishing. We also have two models, two pathways by which someone outside the mill can take advantage of what we have established:

One: Individuals take a class and do their own R&D and small production in the same week. Costs start at \$1,700 for tuition, room and 10,000 weft insertions.

Two: For those who want to hire the mill to do their R&D, the rate is \$200 per hour and five cents per insertion. The artist or designer must be present during sampling whether it is through a class or not -- that way decisions can be made, changes implemented, in a matter of minutes. Production occurs on the mill's schedule.



*Long Staple, Egyptian Giza cotton, Merino Wool. Pleating created via differential shrinkage, left..*

*Long Staple, Egyptian Giza cotton, French Linen – fabric used for window covering and apparel, right.*

*Photo credits: Bethanne Knudson*

We produce yardage, by commission or as part of a designer line. We also learned that few people want to make their own finished products. So we make piece goods: coverlets, throws, scarves, and shawls. We place these goods in high-end small stores, most being a single store, operated by its owner. So far we have avoided competing with our clients, whether they are designers, showrooms or stores. This is a delicate matter. Ultimately, we will also have to sell from our website, because there may be no store carrying our goods near a prospective customer and there may not be enough of the small boutique stores to support the mill without additional venues. We will first try to send the customer to a store, and will not sell under the price our stores charge.

Thus it is inevitable that we will stay small. We do not think that is bad. Indeed, we think we are devising a model for a revived United States textile industry. We were asked by a large North Carolina funding agency if our model was “scalable.” Their view of a revitalized textile industry was to bring back the huge mills that have just failed. We replied “No, it is not scalable (not more than perhaps twice our present size), but it is replicable. Let’s have an industry of small, specialized, cooperative mills. Let’s see each other as friends, or at least as entrepreneurs with common interests.”

They went away shaking their heads. This way of thinking is completely at odds with the history of

textiles as usually written, although there have been small, successful mills in the background through all of that history. We propose to bring that model to the foreground. Our particular niche is not just the excellence of our design, but the skill by which that design is effectuated in a computer file and ultimately in a product. We alone combine software teaching with artisanal weaving. We now also offer cut and sew services. This is especially helpful to those who are starting their own businesses – they can have their custom fabric woven here and in the same building the cut and sew can be executed. What ships is their product, complete with their own label. There is plenty of room for other combinations, other specialties. We will do what we can to help the industry evolve in that image.



*Reversible Matelasse coverlet, Egyptian Giza cotton and New Zealand wool  
Curtains Egyptian Giza cotton and French Linen, left.*

*Egyptian Giza cotton and French Linen scarf, right.*

*Photo credits: Stewart O'Shields*