

Velvet: A Worldwide Passion

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Velvet is a luxury cloth. Garments made of it have dressed the Elite, those with status, power, wealth with the place and position to display their privilege. For the past twenty-five years I have researched the handweaving traditions and techniques of silk velvet. Today I present a glimpse of my research, art and teaching. Here I am with my teacher Vittorio Rettoni in front of a velvet loom at the Fondazione Lisio where I did my Fulbright fellowship in 1986-87. As a youth Vittorio wove domestic table linens. He worked in a mill running mechanical looms until 1959, when he joined the Lisio Company as a weaver. Within a year became their head technician. I am indebted to my many excellent teachers, but I owe my deepest gratitude to Vittorio.

Let us look at some velvets. Here Parmigianino painted an Italian lady of rank surrounded by her three sons. Their dress reflects the height of fashion for the early 16th century. The solid velvet is cleverly cut with slits and trimmed with gold. The delicacy of the white lace contrasts with the rich density of the velvet. We shall soon see how solid velvet is woven.

Around the same time Bronzino painted this aristocratic woman dressed in solid red velvet. But here her bodice has a large, central design. For this type of velvet, the pile was cut at two heights during the weaving process. This pile-on-pile or alto basso technique was a specialty of Venice. In fact the badge of authority for a Venetian senator was a shoulder sash of red pile-on-pile velvet with the crown and rosettes. We shall see how cutting the pile effects the design.

Here Bronzino shows us Eleanora da Toledo dressed in magnificent patterned velvet. In figured velvets, areas of pile are contrasted with areas without pile. Again the bodice is the center of attention. The motif occupies the entire width. On the right is a similar mid 16th century Venetian design woven with green silk pile on a cream ground with loops of metallic gold. We shall see how patterned or figured velvet is woven.

Here is the epitome of opulence for the late 15th century, a Florentine man's cape woven in red silk pile cut at two heights on a golden silk ground with tiny loops of real gold brocaded in the voids and scattered in the red pile. What a show!

Likewise the ecclesiastical garments of the Roman Catholic Church set the fashion of the day. On the left is a diagram for cope, a ceremonial cape worn by important priests and high officials of the church. On the right is a detail of a cope woven in red, green and violet with real gold

enrichments.

The chasuble has changed from a cone to the slimmer fiddle-back shape. On the right is a fine example of an early 16th century figured velvet woven with three pile colors on a satin ground. We shall see how polychrome velvets are woven.

Another ecclesiastical garment is the dalmatic. The diagram shows the simple layout and the slide a late 15th century example in red velvet on gold ground with large pomegranate motifs.

The simplest velvet structure is solid velvet. True velvet is made from the warp. Velvetene is made from the weft. A warp is a set of threads held taut on the loom. Velvet needs two sets of warps, one for the pile that make the tufts, and one for the ground that weaves the foundation of the cloth. The pile warps are lifted over a slim velvet wire generally made of brass, and then followed by 3 weft shots. In the 2nd weft shot, the pile warps are also lifted so that they interface with the ground. After 3 velvet wires have been woven in, placing a slim blade in the groove and drawing it down the channel cuts out the 1st. All the cut tiny loops become the dense, tufted surface.

In every place I have studied velvetweaving I have looked for answers to these five basic questions.

How do they control the tension of the pile warp?

How do they prevent crushing the woven velvet while it is on the loom?

How do they cut the pile loops?

How do they control the pattern and design?

How does the choice of ground weave effect the cloth?

My research has taken me to six countries where I have found fourteen ateliers that still weave velvet by hand. To date only twenty-seven weavers remain who weave velvet by hand.

Let's see how solid velvet is woven in Italy, England and China. First we go to Zoagli, Italy, along the Italian Riviera between Rapallo and the Cinquetera. The town faces the sea.

The beaches are stone, not sand. Little farming is possible. Traditionally the men fished and the women stayed at home and wove. In 1890 records show 1200 looms were active.

Today six looms remain and only two family-run ateliers are left. First we shall visit the Cordani showroom and weaving laboratory.

The Cordani's have always been *mercanti*, the people who direct the production and distribution of the cloth. They never wove but managed. Here is Madga Cordani in the showroom. It was her grandfather who built the factory in 1923. She earned her university degree in the Natural Sciences and her dissertation was on developing a new diet for silkworms so that they could spin their cocoons all year around instead of only in the spring and summer. On display is their solid velvet that coordinates perfectly with their patterned or figured velvets. In the back is large, polychrome velvet as well.

Two looms in the weaving laboratory weave solid velvets and one, patterned velvets. In Zoagli solid velvet is called *velluto liscio*. It translates as smooth velvet. The solid velvet loom has two warp beams. The higher beam holds the ground warp with firm tension; the lower beam

carries the pile warp with light tension. Rosalba Azarro, one of the three weavers working for Cordani, is starting a new bolt. The loom is simple with no complicated parts. The frame is sturdy made from hardwoods.

The second loom has a gold pile warp on a gold ground.

On a standard loom each warp is threaded through the eye of one heddle. The heddles are held on frames, also called shafts. When the frame lifts, all the warps on it move as a set and form a plane above the weft. In plain weave only 2 frames are needed: one lifts the odd warps and one, the even warps. To weave twill 4 frames are needed.

To weave solid velvet four shafts control the ground warp to weave twill and two shafts manage the pile warp. Four treadles move the ground shafts and one treadle makes the pile warp lift.

The unique feature of this loom is the beater. It is called a *cassa battente snodata*. *Snodata* means limber. The beater is hinged and swings freely to deliver an extra punch to make the cloth firm and the pile dense.

Here Marissa uses the hinged beater.

In the weaving process, she inserts the 1st velvet wire, then the first ground weft using shuttle number one. She beats softly using only the pressure of the beater to place the velvet wire. The velvet wire remains tip up. On the second ground she raises the pile warps as well and throws the second shuttle. This time she beats hard using the hinged beater for added force. The velvet wire turns so that the tip is down and the miniscule channel is now on top. The third ground is also a firm beat and it returns the second shuttle to its original side. This ground weave is 3/1 twill. Only two velvet wires are used in rotation.

The velvet knife is a special tool called a *tagliarola*. It holds a blade snapped from a double-edged razor, the kind men use for shaving.

The blade must be sharp to make a clean cut. A dull blade drags and cuts the pile loops unevenly. In Zoagli they have a special tool, a *rifilatrice*, to cut the blade. The same word means a papercutter.

Great care is taken not to crush the woven pile. A special device called a *gatta*, maintains the tension on the loom. As you can see in this diagram the woven cloth enters a compartment in the front beam. It is wound around a bar several times and emerges to hang loosely.

The cloth then falls into the *cassetto*, a box, that stores it until the whole bolt is woven. Generally solid velvet is woven about 60 centimeters wide. They cannot weave wider because the velvet wires want to torque and the alignment of the cutting channel cannot be controlled. A master weaver can weave approximately 3 centimeters per hour for an average of 20 centimeters per day. It takes 7 to 10 days to weave a meter. I paid 350 euro per meter in 2003. The weaver is paid by the amount woven, not by the hour. Cordani offers many colors of *velluto liscio*.

In China at the Suzhou Silk Museum they weave solid velvet by another method. Here is the loom and the ingenious apparatus they use to prevent crushing the woven velvet. As the velvet is wound on the cloth beam, crossbars are inserted that keeps the layers apart.

In England Richard John Humphries established his atelier in 1971. He started weaving at the age of 15 and was the last apprentice of the famous Warners Mill that wove the solid crimson velvet mantle for the coronation of Queen Elizabeth II in 1952. Clive Nunn is the masterweaver who makes the midnight blue velvet for the Knights of the Garter regalia and the emerald green velvet for the Knights of the Thistle. The regal purple velvet that adorns the royal crown that you see at the Tower of London come from this atelier.

Instead of using a single beam to hold the pile warp, each pile warp unit is wound on a separate bobbin and placed in racks suspended behind of the loom. This method gives greater control over the pile warp tension.

They also weave special velvet trims to restore carriages and private train cars.

Voided velvets have areas of pile and areas without pile. The ground is an important element in the design. The pile can be left uncut to look pearly and light, or it can be cut to look deep and dark. The diagram shows the pile warp being used at different rates. The pile on the far left is used every time; the pile on the far right is only used twice. The pile warp tension would soon become uneven if it was wound on a single beam.

Because the pile unit unwind at different rates, another device is absolutely necessary. The bobbin rack or *cantra*, is below the main frame of the loom. Like in England each pile unit is wound separately on a bobbin, individually weighted, and placed in a precise position in the *cantra*. When the pile is needed, the bobbin unwinds and the pile is lifted over the velvet wire. When the pile is not needed, it is held back by a little weight that acts like a brake, and then interlaced into the ground. The design or pattern is controlled by a set of cords instead of frames. The drawboy stands beside the loom and pulls the specific cords needed to lift the pile units in that particular row in the design. The master weaver inserts the velvet wires and ground wefts. He or she cues the drawboy. Together they built the cloth row by row.

In China at the Suzhou Silk Museum I studied the last remaining loom that still weaves figured velvets with the aid of a draw person. The Zhang Rong loom is an impressive site. The six-tiered bobbin rack measures about 2 meters by 1.5 meters and is situated in back of the loom.

In this set-up there are over 5,000 pile warps and more than 13,000 ground warps. Instead of bobbins the pile warps are wound on quills, little tubes.

Zhu Yunxiu is the masterweaver. She is the only Zhang Rong velvetweaver left in China.

Shen is perched inside the loom above the warps. She pulls the pattern cords one by one following the cues of the masterweaver. The pattern cords form a large loop on her right side.

This velvet has cut blue pile on a blue ground of satin. It has the traditional auspicious symbols and can be sewn for dresses.

Early in the 1800's J.M. Jacquard invented a device that replaced the drawboy. It was a revolution for the weaving industry. Ateliers converted to the Jacquard system. The Jacquard head sits on the top of a standard frameloom and it does the job of the draw person.

It uses a set of perforated cards to program the weaving. Each card makes every warp take

a position above or below the passing weft. Each warp is threaded through a heddle, but the heddles are not in frames. Each dangle freely from its hook and each can move independently.

Each hook receives instruction from a particular spot on the card. A 100-hook Jacquard has a card with 100 spots. The cards are laced in a chain. One by one they fall onto the cylinder and are read by a bank of needles. When a needle enters a hole, the warp lifts; when the needle is held back because there is no perforation, the warp stays down. The design emerges weft-by-weft, card-by-card. Securing the last card to the first makes a continuous loop, and the design repeats.

Jacquards come with 100, 200 or 400 hooks; Vicenzi or Verdol mechanisms have more than 1,000 hooks. Here is a Vicenzi head with 1176 hooks.

The number of hooks limits the size of the design but not the size of the fabric. Each hook can operate more than one heddle. For a simple reflected or mirror image every hook has two cords that govern matching spots on either side of the central vertical axis. The mounting on the left is for a Jacquard loom with 200 hooks. When a hook rises, eight warps will be lifted. The card has 200 spots for perforations. In this case the design is mirrored taking two cords, and then it is repeated four times across the width of the fabric.

Let us return to Zoagli and visit the second atelier. The Gaggioli family runs every aspect of the business; they design, weave and market their cloth. Here Lorenza Gaggioli looks out of her window. The looms are on the ground floor; the showroom is on the first floor and the second floor is the living quarters for the family. Her husband Sergio is the master weaver and designer, but he is in poor health and now their son Giuseppe and daughter Paola have taken over. Here Lorenza stands by their damask loom with my friend and colleague cultural anthropologist Anna Pami.

Here is the Gaggioli showroom. Bolts of solid velvet in many colors are for sale plus damasks and figured velvets.

Their velvet loom is mounted to weave large, reflected ciselé velvet. Their Jacquard head has 400 hooks.

The *cantra* holds 800 bobbins. Each pile unit has 16 strands of 20/20 silk organzino.

The weaving process takes six steps: two velvet-wire insertions followed by four ground wefts.

In one centimeter there are eleven to twelve pairs of velvet wires. A masterweaver can produce approximately 40 centimeters per day. In Zoagli the Association of the Two Towers plans to open a museum of velvet featuring the practices of these two families.

Other ateliers in Italy, France, England and Turkey weave ciselé velvet. In Venice Luigi Bevilacqua founded in 1875 produces superb ciselé velvets. Here I am in the weaving laboratory surrounded by the weavers and staff and the stack and stacks of Jacquard designs and punched pattern cards.

The *cantra* used here looks the same, but there is a crucial difference. Each bobbin is wound with more than one pile unit. In the diagram each bobbin carries four pile units, one for each

repeat of the pattern in the width of the cloth. In the *cantra* on the right there are two repeats of the pattern so each bobbin holds two pile units.

The two master weavers at Bevilacqua are Ninetta Zandali and Mariella Bearzi. They started weaving here when they were twelve years old, over fifty years ago. They learned to weave all the classic silk weave structures: damask, brocade, lampas, liseré but now only velvet since ciselé velvet is the only weave structure not adapted to the powerlooms. Last year Manella's daughter started her apprenticeship.

The Bevilacqua showroom is on the Grand Canal and their shop is near Piazza San Marco. They have woven for popes and have done 4,500 meters of velvet for an opera house. Recently they received a commission from Dolce e Gabbana.

In Lyon, France, Pirelle is renowned for their exquisite silk cloths. It is the oldest firm weaving silk velvet. It was established more than 250 years ago and their archives are massive. They are the only atelier that have documents recording the change from drawloom to Jacquard. Four looms are active weaving velvet.

It took 1600 bobbins to weave this large design. My colleague Paul Duperray introduced me to Pirelle's masterweaver Yvette.

Also in France is Agnes Alauzet. She is on the left with my friends Veronique Bosse-Platiere and Matilde Nerot who kindly translated for me. Unlike the majority of velvetweavers I met, Agnes has formal academic education focused on textiles. She graduated from the Superior School of Textile Industries in Lyon and apprenticed at Pirelle. In 1984 she opened her own atelier in the Croix-Rousse district in Lyon. In 1990 she received the prestigious Best Craftsman of France award.

Besides her own designs she contracts with Pirelle and weaves ciselé velvets on her looms. Her Verdol head has 1344 hooks.

She can weave large, mirrored designs. This one has the distinctive lacy treatments that Lyon is noted for.

The atelier of Tassanari et Chatel is located on the outskirts of Lyon. They can weave all types of velvets, even polychrome ones like this example.

When I visited them they were weaving this ciselé velvet on their loom.

On an Institute of Turkish Studies grant, I was able to visit the Dokuma Fabrikası in Hereke, Turkey. It was established during the Ottoman Empire to produce luxury cloths for the interiors of grand residences like the Dolmabahçe Palace. They have sixteen looms and nine weavers. Today it is under the Ministry of Culture.

My able translator was Dr. Biret Tavman who teaches at Marmara University and Beykent University in Istanbul helped me understand the weaving operations.

Of the nine weavers three weave velvet: two are *usta*, masterweavers and one is an apprentice. They weave cut velvet on a satin ground and use many more wires. When they also cut out the velvet wires in batches of 2 to 4 instead of singly.

The Foundation Lisio in Florence, Italy weaves all types of velvets, brocades, damasks and

lampas. Giuseppe Lisio opened the company in 1906. His only child Fidalma took over the business in 1945 at the midst of WWII. In 1971 she turn it into a foundation dedicated to education and perpetuation of silk handweaving traditions. I first visited the showroom in 1978 and first worked with Vittorio in 1984.

In recent years the haut couture houses like Fendi, Valentino and Versace have commissioned them to weave fabrics for ladies exclusive evening bags. The bags are produced in limited editions of 40 and are all pre-sold before the work begins. The first Fendi bag, about 5 years ago retailed for \$3000. The Valentino bag was auctioned for \$10,000. Commissions like these allow the Foundation to continue as a non-profit educational institution. Here Alessandro Pace is weaving the Fendi commission.

Avid collectors eagerly await each year's design.

Lisio is also capable of producing the most elaborate polychrome velvets. In polychrome velvets a second or even a third pile unit runs next to the first. The designer has a choice of two or three colors instead of one.

Here is Lisio's magnificent Serenissima velvet with three colors of warp pile on a satin ground. It measures 66 centimeters across the width. The height of the design is nearly a meter. One repeat of the design takes 1,984 cards.

At every point in the pattern, the designer can choose to have a green or cream or colored pile, or no pile at all. The denseness of the warps allows for smooth curves and great detail.

The *cantra* has more than 3,000 bobbins wound with a single pile unit. Each pile unit is composed of three strands of silk. There are more than 12,000 individual silk threads in this warp.

On a good day a masterweaver can do approximately 20 centimeters. Bevilacqua, Prella, Tassanari et Chatel are also able to weave polychrome velvets. They only await the commissions.

In Kyoto, Japan velvet is made by an entirely different method. Master Kunikazu Ito is a velvet carver. His job starts after the cloth is taken from the loom. The cloth comes to him as solid velvet with all the round velvet wires woven in. His cutting tool is a special knife that he makes himself.

The stencil paper is very special too. It is made from *kozo* paper that has been laminated together with persimmon juice and carefully smoked with resinous wood chips for a month. It is very strong and can be soaked and washed repeatedly without disintegrating. Master Ito cuts the stencil, puts it on top of the woven velvet wires, and pounces on white powder. He uses his knife and cuts where the white is. The cut loops look much darker than the surrounding uncut loops. He used this 16-petal chrysanthemum design for the velvet that covers the chair that the emperor uses in the annual opening of the Diet ceremony. On the right is another chair made for the restoration of an imperial villa.

In Nagahama, Japan Eikichi Higuchi has a power Jacquard mill. For his velvets he puts all the pile warps on a single beam. The pile warp is below the ground warp. Then he puts a weight

on each pile unit and weaves. If the pile is not needed in the design the Jacquard hook remains down and the pile is hidden in the ground. So every time a pile is not used, the extra slack is taken up and it lowers into the pit.

Instead of using wires Master Higuchi weaves with fishing line, monofilament. After the cloth has been taken from the loom, he decides where to cut the pile. This method is especially useful for the asymmetry of Japanese esthetics.

Every other summer I take six students to the Foundation Lisio for an intensive, three-week workshop on Jacquard design and weaving.

The students are divided into 3 teams of 2, and each team concentrates on one of the classic silk weave structures. They start with a simple sketch and translate it to the point-paper appropriate to the number of hooks available in the design repeat and the density of the warp and weft elements.

Here is a lampas design of a Venetian mask and it woven.

Once they have the point-paper pattern, they are ready to punch the cards. Here is Yvonne punching cards for the damask design based on a peacock feather.

The woven cloth is very similar to the drawing.

Once the cards have been punched, they must be laced together and then mounted on the loom. Here Sara and Reina are almost done sewing their cards and next they are very joyful when the cloth comes off the loom.

While the students are working, I weave my velvet designs on this loom with a Jacquard head with 400 hooks.

Its *cantra* has 400 bobbins wound with red pile and 400 with blue.

Knowing this I can begin my design. I start with a simple right triangle divided to make two trapezoids and one little equilateral triangle. I take that unit and rotate it, fit it in, and make a square. I then repeat it, rotate it, and arrange units to make an overall design.

Once I have finalized my design, I draw it on point paper. My design repeat is exactly 25 vertical columns wide. Each column has 8 squares. I read the first line and punch only the red squares, then I come back and reread the same line and punch only the blue squares.

On the 1st line starting at the left I punch all 8 since all of them are colored red. The next column over, I again punch all 8, but on the 3rd column I punch only the first 6 since the last 2 are blank. In the 4th column I do not punch any holes. After I have punched all 25 columns, I begin again reading only the blue.

Here is my design woven on the loom. I call it Girandola, which means pinwheel, the child's toy that turns in the wind.

This design is a metaphor for my life. I do not see myself as a juggler trying to keep the balls humming in the air because the juggler deals with just one ball at a time. I think that I am more like the plate spinner in the circus. Each plate spins on top of a slim rod. To keep the plates aloft, the performer must run from plate to plate and give each a little spin.

When I was weaving Girandola, I realized that if I changed the weft color, I could make my

little equilateral triangles appear to be two right triangles, back-to-back.

I am fond of geometry and patterns that imply 3-dimensions. Like this design called One Step.

... and this design called Sempre Diritto, that means Straight Ahead.

This design is called Salute. It means 'health' but is also the name of a church in Venice. I based my design on the pavement pattern used in this church.

When I am at home in Eugene, Oregon, I weave on a 16-shaft AVL computerized loom. On it I weave these miniature book covers measuring 3 inches wide.

When you open the book, you can see the stitched silk organza text. These little books could be worn on a belt as it was done in Medieval Europe and opened as you would a prayer book.

I teach my students how to weave velvet at the University of Oregon. I also have taught at the Surface Design conference in Kansas City where I fabricated this portable *cantra* using PVC pipe for the frame and netting shuttles instead of bobbins.

The pile unit is 20 strands of sewing machine thread and there are 6 pile units per inch.

I have invented this peg-board *cantra* that can hold sewing machine bobbins for silk pile. It collapses and fits in a carry-on suitcase.

I used this set-up when I was the resident artist for the Asian Art Museum in San Francisco where I made miniature books using the methods I learned in Japan.

My future plans are filled with velvet. I plan to write a book about my research and the Foundation Liso has asked me to organize a symposium for Fiber educators who are interested in complex weaves. I have an exhibition scheduled for January and I have been asked to teach a workshop on velvetweaving for Convergence 2006 in Grand Rapids, Michigan. This biennial conference is organized by the Handweavers Guild of America. My Fibers program just received a grant to buy a computerized Jacquard loom and I shall be very busy trying to learn how to run it. Velvet has taken me on a wonderful journey. I have great respect for the many artisans I have met and hope to honor them. Thank you for being part of my velvet quest.