

Computer Aided Design: Textile Software in Design for Jacquard Loom Weaving



Virginia Harrison

ISS Institute/TAFE Fellowship

Fellowship funded by OTTE, Victorian Government

ISS INSTITUTE: TAFE FELLOWS REPORT

COMPUTER AIDED DESIGN - TEXTILE SOFTWARE IN DESIGN FOR JACQUARD LOOM WEAVING.

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1.0 Acknowledgments

1.1 International Specialised Skills Institute Inc.

1.2 OTTE, Office of Employment, Training and Tertiary Education.

1.3 RMIT University, Keith Cowlshaw, Head of School – Fashion and Textiles, Portfolio of Design and Social Context.

Daryl Teschendorf, Managing Director, Creation Baumann Australia

David Calvert, Furnishing Manager, Woolmark Co.

Barbara Marshall, Director, Marshall Design

2.0 Introduction

2.1 International Specialised Skills Institute Inc.

Since 1990, ISS Institute, an independent, national, innovative organisation, has provided opportunities for Australian industry and commerce, learning institutions and public authorities to gain best-in-the-world skills and experience in traditional and leading-edge technology, design, innovation and management.

ISS Institute offers a broad array of services to upgrade Australia's capabilities in areas that lead to commercial and industrial capacity and, in turn, return direct benefits to Australia's metropolitan, rural and regional businesses and communities.

Our core service lines are identifying capabilities (knowledge, skills and insights) to fill skill gaps (skill deficiencies), which are not available in accredited university or TAFE courses; acquiring those capabilities from overseas (Overseas Skills Acquisition Plan - Fellowship Program); then placing those capabilities into firms, industry and commerce, learning institutions and public authorities through the ISS Research Institute.

Skill Deficiency

This is where a demand for labour has not been recognised and where accredited courses are not available through Australian higher education institutions. This demand is met where skills and knowledge are acquired on-the-job, gleaned from published material, or from working and/or study overseas. This is the key area targeted by ISS Institute.

Overseas Skills Acquisition Plan - Fellowship Program

Importantly, fellows must pass on what they have learnt through a report and ISS Institute education and training activities and events such as workshops, lectures, seminars, forums, demonstrations, showcases and conferences. The activities place these capabilities, plus insights (attitudinal change), into the minds and hands of those that use them - trades and professional people alike - the multiplier effect.

ISS Research Institute

At ISS Institute we have significant human capital resources. We draw upon our staff, industry partners, specialists in their field and Fellows, here and around the world.

Based on our experience and acute insights gained over the past fifteen years, we have demonstrated our capabilities in identifying and filling skill deficiencies and delivering practical solutions.

Our holistic approach takes us to working across occupations and industry sectors and building bridges along the way:

- Filling skill deficiencies and skill shortages,
- Valuing the trades as equal, but different to professional disciplines,
- Using 'design' as a critical factor in all aspects of work.
- Working in collaboration and enhancing communication (trades and professional),
- Learning from the past and other contemporary cultures, then transposing those skills, knowledge and insights, where appropriate, into today's businesses.

The result has been highly effective in the creation of new business, the development of existing business and the return of lost skills and knowledge to our workforce, thus creating jobs.

We have no vested interest other than to see Australian talent flourish and, in turn, business succeed in local and global markets.

Carolynne Bourne AM, ISS Institute's CEO formula is "skills + knowledge + good design + innovation + collaboration = competitive edge • good business".

Individuals gain; industry and business gain; the Australian community gains economically, educationally and culturally.

CEO

Ms Carolynne Bourne AM

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Recipient – Virginia Harrison, Textile Designer/Maker and Teacher, with 28 years experience as a weaver and dyer, in my own studio I work on a Computerised Dobby Loom.

I am employed at RMIT University, in TAFE, Diploma of Art Studio Textiles Design and Production, Fashion and Textiles, Portfolio of Design and Social Context on Brunswick Campus.

Aim of Fellowship

The ISS Institute - TAFE Fellowship was awarded to Virginia Harrison to undertake an overseas study program to gain a comprehensive understanding to develop the interaction between Design, Computer Aided Design and Textile software for Industrial Jacquard Loom Weaving.

2.2 Australian Content

In Australia we have been growing fine wools for many years, we produce the best wool fibre and a large amount of the wool required worldwide. Some fibre is scoured and combed before being sent overseas thus value adding to the industry. A very small proportion of the fine fibre remains in Australia for domestic apparel use. Some of the fibre sent overseas is however purchased back as yarn for machine knitting and weaving

CSIRO is at the forefront of Research and Development using wool fibre in the textile area, always trying to come up with new ways of creating a softer, lighter more appealing fabric for consumers world wide. The development of machine washable wool brought people back to wearing wool garments but overseas fewer consumers buy wool garments or fabrics than Australian consumers do.

Consumers are becoming more aware and more demanding of environmentally friendly fibres for apparel, the demands in Europe for all manufacture to consider the environment is a reality.

In the past most of the textile companies relied on images from abroad to give them their design ideas.

Designers employed by such companies were expected to translate these images into a fabric. Since the cut back in tariffs and levels of protection along with globalisation, many textile companies in Australia have been down sizing or closing their mills and contracting off shore. Those that have remained have adopted new technologies, worked with CSIRO in research and development to create new fabrics to try and maintain a leading edge and to keep their mills viable.

The textile industry has been relatively slow in meeting the challenges of a global economy. With the reduction yet again of the levels of protection there will be more impact on the industry in the years to come.

What is emerging is a niche market for a smaller new style industry, with the flexibility to produce small runs and/or one off fabrics, made in Australia.

This new industry is not so capital intensive and is generally run by young, motivated, skilled people.

The niche market is not only to be found in the apparel end of the market but also in interiors and carpets.

The new industry requires designers, not only trained in traditional design methods but also with the ability to produce original Computer Aided designs. Designs that can then be sent electronically to a weaving mill to be produced to the designers specifications.

2.3 The aim of the Fellowship

The aim of this study was to gain a comprehensive understanding to develop the interaction between Design, Computer Aided Design and Textile software for Industrial Jacquard Loom Weaving and to increase and foster the development of small niche weaving industry within Australia.

This could be gained through the development of the integration of CAD technology and design for Jacquard weaving in the Diploma of Art, Studio Textiles Design and Production.

Knowledge was gained by visiting galleries and museums in Textiles and Interior Design/Decorating and by exploring textile design both historic and contemporary. By visiting textile designers to see how they work, and also a textile college to compare facilities and courses. By attending a workshop on Computer aided design for Jacquard Loom Weaving in Florence, Italy and a visit to an International Interior Textile Fair in Brussels, Belgium. And by attending the European Textile Network Conference in Prato, Italy and then to disseminate the knowledge gained to my colleagues and encourage them to apply these new skills.

2.4 Skills Gap

The aims are:

- To provide training possibilities for design students to acquire the skills required enabling them to gain employment in a new innovative textile industry.
- To enable designers in industry to return to study to update their skills.
- To develop interaction between the design disciplines within RMIT TAFE, ie. Links with Furniture Design &/or Interior Decorating/Design students with Studio Textile Design & Production Students.
For 1st Semester 2003, Julian Pratt, ISS Fellow RMIT Furniture Design, and I worked together on a cross discipline design brief; the result of this interaction was a display at Furnitex, July 2003, which received a positive response from the furniture and textile furnishing industry.
As a direct result from this interaction, Warwick Fabrics proposed a textile award. They consulted with Studio Textiles staff on the creation of an award titled “Dream Weaver Award” specifically for designs for Woven Jacquard. The first annual award was given at Furnitex, July 2004.
- To further extend this idea to design disciplines from other colleges &/or industry to explore the possibilities of working with textile design students.

3.0 Fellowship Program

3.1 Introduction

Education & Training

My objectives:

- To visit galleries, museums specializing in textiles and interior design/decorating in Europe also to visit Decosit a unique Textile Fair for Interior Furnishings to be able to compare the latest in upholstery designs with the historical and to meet the manufacturers.
- To meet with textile designers where possible to discuss the differences and the similarities working in textile design in Europe and Australia.
- To meet with textile educators to compare subjects, courses and outcomes.
- To spend two weeks studying Computer Aided Design - Textile Software in Design for Jacquard Loom Weaving.
- To attend a conference of the European Textile Network which was held in Prato, near Florence.

3.2 Program Content

Belgium

Mrs. Hilde D'haeseleer Hogeschool voor Wetenschap en Kunst, Sint Lucas, Gent.

The college offers Diploma and Degree Courses.

She teaches Colour & Design and Experimental Textiles 3D.

Mrs D'haeseleer's primary work is in colour and trend forecasting and she holds the position of Chairman of the Trend Committee for Decosit, the large interior textile fair which is held in Brussels twice a year.

She is also a Trend Consultant for interior textiles working with clients to create trend and colour forecasting as well as storyboards, concept and mood boards. She is a member of Color Marketing Group, an international colour forecasting organization. Their course is 4 years, ours is 2 years. We are fortunate to have an Industrial Jacquard loom on campus, and we want to introduce jacquard design into the Studio Textiles course. They would like to be able to do this also. Both colleges teach CAD for dobby loom weaving.

We discussed the idea of staff/student exchange or student exhibition exchange or even joint student exhibitions of furnishing fabrics at Decosit.



Hogeschool voor Wetenschap en Kunst

Belgium – Brussels

Decosit, International Textile Fair

Decosit, is an International Textile Fair that is held in Brussels twice a year, it specialises in interiors fabrics for domestic, hotels, offices, hospitals, transport. Upholstery, curtains, trimmings, cushions. Wholesale companies from around the world exhibit and sell their textiles. In 2003 there were 450 companies exhibiting in four large halls and 120 companies participating in the Trends Project.

Indigo – Freelance Textile Design Fair

Indigo is a Freelance Textile Designers Fair that is held to coincide with Decosit.

At Decosit I spoke to a number of company representatives:-

Daniele Bonino from Naturtes, Prato, invited me to visit the mill.

Fratelli Reali, from Florence invited me to visit their jacquard mill.

Manufacture des Flandres, jacquard tapestry weavers in Roubaix

Flanders Jacquard Museum at Roubaix,

Warwick Fabrics UK Ltd. Max Warwick, Warwick Fabrics, Melbourne.

Claudio Villa from Como, in the Indigo Hall, freelance Jacquard designs, can sell as a paint up or any point from there to jacquard punch cards, depending on the buyers requirements.

ACID, or Anti Copying in Design, CEO, Dids Macdonald.

This is an English company, very serious about copyright and design and are willing to fight the cheats. They would be happy to work with RMIT or assist us with any copyright issues.

Patrick Geysels; Managing Director of Decosit discussed the idea for a joint student exhibition at Decosit. I explained the Warwick Fabric student award being offered for the first time in 2004 which includes the finalists' designs being woven by Bekaert Australia and 1st prize, a trip to Decosit 2004. He was impressed and very pleased that Decosit was the prize and that a Belgium company (Bekaert Aust.) was involved in the award.

Other Contacts Made at Decosit

Bekaert Belgium, Jacquard tapestry, flat woven and chenille.

De Poortere Freres S.A. Belgium, their production was plain woven chenille in a huge range of colours and qualities. Their designer showed me a board with 12 coloured fabric samples on it, these have been their best selling colours for 20 years! No 1 seller is beige. He produces a range of new story boards annually, the only one where changes are made to the colour ways is the trends board.

Romain Maes NV, Belgium, weave beautiful patterned velvets, a mill run by sisters. Ets Goeters, Belgium, are a company running a weaving mill and a print workshop. They produce a woven range in upholstery and curtain fabric and print a range to compliment their wovens.

Devantex NV, Belgium, produce a coordinated range of, plains, stripes, jacquards in a 'linen look' fabric. The higher end of the range linen yarn was used.

N.V. Fibertex, Belgium, produces a wonderful range of coordinated dobby and jacquard fabrics in a silk like quality for the top end of the range.

OSKR, Belgium had an enormous range of fabrics, coordinates, plain weaves, dobbys and jacquards.

Thanks to Hilde I met people from Belgium weaving mills, people very proud of their designs and fabrics, some trying new things, others staying with the classic designs.

The show was well frequented by buyers and all the local people I spoke with were more than happy with their sales.

Other Venues/ Sites Visited

Gent Textile Museum, some wonderful old pieces of machinery and looms.

Gent Design Museum, the main building is old and beautiful, interior very ornate. Rococo and Baroque rooms, woven wall fabrics, ornate ceilings, patterned wooden floors, jacquard woven curtains and upholstery fabrics.

In a new modern building they had examples from the various design movements of the 20th cent. eg. bauhaus, art nouveau, art deco. As well as contemporary exhibitions.

An Exhibition in a gallery in the village of Damme, displaying Indigo dyed pieces.



Italy - Florence –

Venues and Sites Visited

Costume Gallery, Pitti Palace, garments up to 20th cent..The rooms were as ornate as the costumes, beautifully decorated, wall fabrics.

The Treasury Museum, some wonderful portraits of the family showing them in their finest clothes and jewels. Three fabulous garments, silk velvet and metallic thread, patterned velvet.



Antico Setificio Fiorentino, is a silk weaving mill using antique jacquard handlooms and weaving equipment. The fabrics are woven using very fine hand dyed silk threads, from plain weave to damask and brocade. There was a specific Jacquard loom for trimmings, which are very popular in Florence. There are sample books from which clients can choose their fabrics, some samples date back hundreds of years.
Woven fabric photos.

Sabine Pretsch, Director of the mill, gave me a tour of the show room and the mill. We discussed the Studio Textiles course, she looked at the subject outlines was very impressed with the program and asked if it would be possible to send a young member of their staff for a semester. We discussed an exchange idea, the possibilities of sending one of our students (post grad) to work there and they send a young staff member to RMIT.



Silk Fabrics in the Showroom

Prato is a textile city and has been for hundreds of years. Originally the mills wove woollen fabrics; today they still weave woollen fabrics but also new, innovative high tech fabrics. Prato employs more people in the textile industry than any other city in Europe.

Prato Textile Museum has some very early examples of historical textiles, it also has displays based on the history of the city showing industrial textile equipment and fabrics. The Museum was newly housed in what was originally a Textile Mill.

Attended European Textile Conference-New Technologies and Materials

Contacts Made:-

Cynthia Schira an American jacquard weaver.

Lia Cook, Professor of Art, California College of Arts and Crafts, Oakland, CA.

Louise Lemieux Berube, Director and Co-Founder, Montreal Centre for Contemporary Textiles, Montreal QC, Canada

Patricia Black, Australian Shibori Artist, now living in Italy.

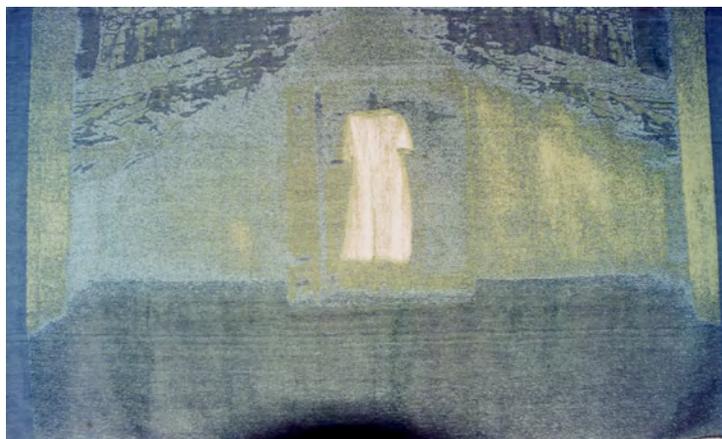
Vibeke Vestby from Norway, who has developed a CAD Jacquard Designs loom with TC1 System.

Anna Silberschmidt, Weaver, Weave Tutor.

Philip O'Reilly, Artist and Senior Lecturer of Art & Aesthetics, School of Art & Design, Cardiff, Wales, U.K.

'Artists at Work - New Technologies in Textile and Fibre Art' was the first exhibition to be held in this new space, artists using a variety of new technologies.

Photos of woven jacquard exhibits.



Day 2 The conference was officially opened in the Palace of Industry. This was followed by, a morning of lectures including:-
Cynthia Schira 'Computerised Jacquard weaving in the USA',
Vibeke Vestby 'CAD Jacquard Designs with the TC1 System' from Norway.

Then a Prato Textile Industry tour to Filati Pinori, Spinning Mill. The tour began in the design room, then to the dye testing labs, yarn testing lab, yarn sample preparation room and finally the spinning mill, the company can spin from a simple yarn to very fancy yarns.

Photo from the spinning mill sampling room



We then visited the fabric finishers, Santosteevano. Here we were unable to take photographs but went on a very comprehensive tour and saw the many ways they can treat fabrics.

Evening Lectures: _

Sarah Taylor working with optical fibres at Galashiels/UK.

Joh Petersen, Bergen Norway. textile Art Works with the use of Industrial Computerized Jacquard Loom.

Anna Silberschmidt on her projects, Reconstructed Bauhaus Textiles from the Gropius Room.

Day 3 An Industrial Textiles Heritage Tour Prato/Florence visiting Gualchiere, the ruins of the old wool fulling mill on the Arno river at Remole. This mill has a long history and only stopped running when the 1966 floods wiped it out.

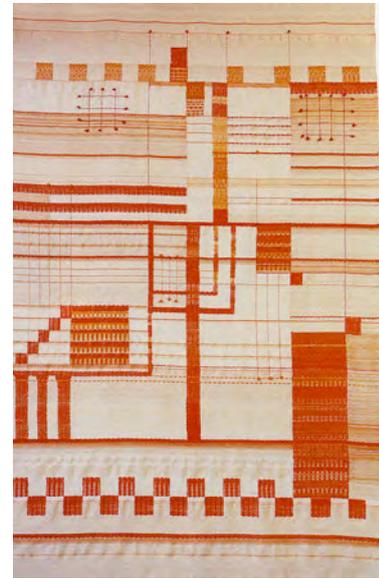
Visited Anna Silberschmidt, textile designer (weaver) at her home & studio, south of Florence in the Tuscan countryside. She teaches three days at a college in Lugano, Switzerland and works in her own weave studio.

Her designs are for interiors, curtaining, screens, cushions, She uses mainly linen and cotton for her weaving, creating wonderful sheer fabrics for curtains and screens.

The course in Lugano is a three year Diploma course, they have based it on the Bauhaus concept, ie. the first year is Design in multi-disciplines and after this one year the students choose the discipline in which they wish to work.

Anna also runs a series of week long workshops every summer at her studio with students coming from all over Europe to attend.

She was commissioned to re-create the original floor covering in the Gropius Room for the now Weimar Bauhaus Museum and also to re-create a wall hanging that once hung in the Gropius room.



Copy of the rug and wall hanging images.



Photo of the gates.

Fondazione Arte della Seta Lisio, the foundation was founded in 1971, prior to that it was a firm hand weaving silk velvets and brocades on antique looms. The Foundation was established to ensure the preservation of the manufacture and techniques of producing such exceptional fabrics.

There are still 4 looms for silk and gold brocade and four looms for figured silk velvet in operation. Fabrics on these looms are produced on request in designs using antique motives or more contemporary designs.



Photos of the brocade loom, brocade fabric and the velvet on the loom.



At Fondazione Arte Della Seta Lisio, I participated in Computer-aided Textile Design CAD for Jacquard Weaving course of 2 weeks duration. Analysing fabrics, working at a computer using Point Carre program, discussing design with our tutors, Julie Holyoke and Eva Basile. They taught in the same way as they produce, through cloth analysis to interpret the weave structure and then to interpret the design into the CAD system.

Also at Lisio there is a gallery displaying framed examples of the fabrics that have been designed and woven at Lisio.

Photos of fabrics in the gallery.



In one of the teaching rooms there are framed fabrics created and woven by students taking the 12 week course in Jacquard Design & Weaving.

We had the privilege of looking at some of the Lisio collection of fabric samples, fabrics dating back 500 years these were once used as the source for creating new jacquard designs.

3.3 Outcomes of the Fellowship program

Hilde D'haeseleer, has many years of experience in design, weave and trend forecasting, it would be of great benefit to have her visit to give lectures.

Patrick Geysels, Managing Director of Decosit was not against the idea of a student display at Decosit, he wondered who would fund such a project.

A small city like Gent having a Textile Museum and a Design Museum.

Decosit is unique, what a wonderful introduction to international fairs. It gives a cross section of what is happening around the world with displays coming from so many different countries. It is focused on interiors and upholstery fabrics.

Gent College is 4 year course, with emphasis on design and creativity, dobby looms. Lugano College is a 3 year course, taking the Bauhaus ideal, 1st year concentrating on multi discipline design, with dobby looms.

RMIT is a 2 year course, emphasis on design and creativity, time short, program full. We have doobby looms and Jacquard looms.

Since my trip RMIT Brunswick has installed a computer aided jacquard hand loom, which is to be in use by the middle of 2006. The students will then be able to have their designs woven on the industrial jacquard &/or to weave them on the hand loom, an opportunity that very few students in colleges around the world have. These students will not only learn Scotweave Jacquard CAD program but will be able to take their designs through to the woven fabric.

It is planned to offer the use of this loom to designers and students from other universities.

We also envisage a staff exchange with other universities and are currently negotiating with a University in New Zealand and ANU Canberra.

4.0 RECOMMENDATIONS

4.1 Government

Government could be encouraged to link with industry and to sponsor new initiatives.

There have been precedents established, in 2003 there was a lot of talk about Brunswick Campus becoming a Textile Design Centre for small and burgeoning textile companies, this seems to have gone of the agenda.

It would be good re invigorate the proposal to create an incubator type resource where recent graduates and small business/freelance designers can access equipment, expertise and computers to use the centre as a networking location.

4.2 Industry

Industry should be encouraging young designers. Currently the industry seems to lack the confidence to use local designers. They expect designers to copy what they have sourced overseas. It is the old cultural cringe mentality. Having spoken with designers in Belgium who are working for large weaving mills and are given the opportunity to produce their own designs to display on the company stand at Decosit, it would be refreshing to hear of this happening in Australia.

Hilde D'haeseleer has been invited to Furnitex this year, 2006 (pending a successful grant application) and has also been invited to give a lecture to RMIT staff and students at Brunswick Campus. Hilde has an international reputation in Interior design, colour and trend forecasting. She will be an inspiration to the lecture program at Furnitex and also for the staff and students at RMIT Brunswick

4.3 Local and National Firms

Local industry can itself help encourage the uptake of new techniques and new technology by rewarding and identifying new graduates who obtain levels of excellence. More awards of the calibre of the one mentioned below would be very

good as they would; encourage students ; involve industry ; promote young Australian designers in a worldwide/national forum.

Dream Weaver is one award for the students. It is an excellent experience incorporating Warwick and Bekaert Australia. The students visit Warwick Fabrics and Max Warwick talks to them with regard to his company and the expectations for the award. There is also a visit to Bekaert, the head designer talks with students and they take a tour of the show room, the design room, the mill, visiting the dye house, weaving and finishing halls.

The three finalists have their fabrics woven and a chair covered and displayed at Furnitex. It virtually guarantees employment.

4.5 Education & Training

The Diploma of Art Studio Textiles Design & Production, is unique in Australia. It is important for the long term effective development of textile design in Australia that such a course is available nationally. This could be developed in short course series initially (in link with ISS) to encourage and develop industry awareness of the potential of new niche industries such as jacquard.

Textiles is no longer a subject being taught in Secondary Colleges, this needs to be addressed. Students need to understand basic textiles and textile design as textile design is the first step in the production chain to fashion, interiors etc. Without exquisit textiles the world would be very plain.

Currently Studio Textiles is a 2 year Diploma course on completion of two years the graduates response is they would like to have extra time to put into practice what they have learnt and to expand their ideas and experiences. In Gent the course is 4 years duration and in Lugano it is three years.

4.6 Marketing/Community

Small style industry is gaining knowledge of new and traditional techniques that are developed here. They need to be out in the marketplace to compete with overseas products and techniques. Ongoing involvement with state and national manufacturers, textile producers, consumers eg. Furnishings should be promoted and encouraged.

4.7 International Specialised Skills Institute

It would be inspiring for local designers/manufacturers and students of textiles if they were to experience even a small proportion of the breadth of information I acquired while visiting the various studios and workshops. If there was an opportunity to bring textile designers from overseas, to offer workshops & lectures, to explain how they work in their environment. To encourage development of ideas and skills.

4.8 Further Skills Gaps....

References

Decosit International Textile Fair Catalogue

Costume Gallery – Pitti Palace www.ami-co.it

Galleria del Costume di Palazzo Pitti

Costume Gallery ‘Collection’ booklet

Antico Setificio Fiorentino Book

Prato History www.po-net.prato.it

Museo del Tessuto information booklet

Artists at Work New Technology in Textile and Fibre Art Exhibition Catalogue

Jacquard pieces on Page 12:-

Top – by Sonja Weber, Untitled, 170X300cm, CAD Jacquard woven

Bottom – Janis Jefferies, Uniform and Laundry (Restaged 1), 180X80cm, woven from a digital print as a Jacquard process.

Gualchiere, Fulling Mills at Remole www.mega.it

European Textile Network Magazine articles

Fondazione Arte Della Seta Lisio Booklet

Pinori Filati Company information booklet

Santostefano Company information booklet

Image on cover, a Jacquard Loom at the Mill Museum in Roubaix, France.

Appendices

Certificate from Fondazione Arte Della Seta Lisio

CD – Tour of Jacquard Mill Museum, Roubaix, France. 3mins.

Produced in a workshop at Lab3000 in 2004

FONDAZIONE
ARTE DELLA SETA LISIO

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ATTESTATO DI PARTECIPAZIONE

si certifica che il sig.

Virginia Harrison

ha frequentato il corso di

cad Jacquard

Anno *2003*

Firenze, li *3 ott '03*

Firmato
il Presidente della Fondazione

Francesco Ottagio