Cloth Decoded

A woven textile collection exploring the relation between Swedish traditional textiles and computer-generated design tools and digital aesthetics.

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“It's not craft as handicraft that defines contemporary craftsmanship, it is Craft as knowledge that empowers the maker to take charge of the technology.”

Peter Dormen
Abstract

This work places itself in the field of textile design and jacquard woven textiles. By exploring the relationship between the traditional Swedish bindings simplified overshot and monk's belt, and computer-generated design tools and digital aesthetics, the primary motive has been to design a woven collection that explores alternative and contemporary expressions of traditional textiles. By challenging traditional properties and their original context, the collection has explored their spatial recognition as experimental decorative textiles. By adapting an experimental design method that forces de-contextualization and manipulation, the outcome of the study is a collection of three woven textiles which all suggest how traditional techniques can be revisited and reworked into contemporary contexts.
Keywords

Textile design, Jacquard weaving, traditional textiles, digital aesthetic, digital weaving.

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The amusement, and reputedly clash, between craft and technology have aroused curiosity for many artists and designers to explore this yet blurred, and undefined, border. In the field of textile design, traditional concepts of weaving and technology may seem far apart. However, the likeness of weaving principles and structures of operative computing systems are strongly related to one another. Explained by Ta’i Smith (2017), the traditional image of textiles which is historically linked to women’s work, domesticity, and so-called feminine sensitivity, is misleadingly reductionistic. She proposes that textile practices, such as weaving, are logical operations produced through structural processes similar to digital technologies (Glass Bead and Smith, 2017).

Even though knowledgeable similarities between the two concepts can be highlighted, friction, commonly based on fear and skepticism, has created separation and hierarchy between craft and technology throughout history. This can be traced back to the acceleration of modernity and the progression of machinery, from the industrial revolution to the constant technological development of today. The skepticism has also undergone a transformation of resistance, reflected early e.g. in the Luddite movement in 1811, when the suffering of the artisan reflected fear of alienation and fear of machinery replacing human work opportunities (Salolainen, 2022). Similar disagreements can be found in discussions today, as the role of AI has broadened its position in society such as in contemporary art.

Although the development of technology has enriched the prime parts of society, in craft, and more specifically in the case of weaving, a hierarchy between handicraft and technology still seems to affect the value of appreciation as an art form. Can technological tools and industrial processes led by artistic intentions be seen as equal to handicraft?
2.2 State of the art

CAD, computer-aided design, can be made with computer hardware or software and is incorporated in the making process due to the optimizing and efficient workflow, quality and the digital possibilities it provides. Although CAD refers to the usage of soft- or hardware, it also exists in the field of art as a specific aesthetic embracing various qualities of the digital. The defined aesthetic around this genre varies depending on the time period as it has undergone a transformation from minimalistic pixel art to hyper-digital.

Charlotte Johannesson is an artist who is working in the field of pixel- and textile art (fig.1). Her work is as relevant today as during her breakthrough during the 1980s with continuous exhibitions worldwide. She recently took part in the exhibition Unweaving the binary code - Hannah Ryggen Triennale at Kunsthall Trondheim in Norway, a group exhibition showcasing 12 contemporary artists working with coding and weaving (Kunsthall Trondheim, 2022). As an originally trained weaver, she combines the craft technology of the loom with the digital technology of computer programming, exploring their formal and conceptual connections into pixel art and computer-based weaves. (Hollybush Gardens, n.d.).

A design duo discussing the use of contemporary technology in their craft practice is Augmented Weaving (Studio Bon, 2022). Established by design developer Flavia Bon and textile designer Anita Michaluszko, both educated in physical craft, they critically raise questions about the role of the craftsman during the increscent use of digital tools within art and design. Their design-awarded project Into the Warp (fig.2) is showing the value of combining physical and digital craft by demonstrating how the synergy generates skills in both directions. With this work, the duo claims that mastering software is a craft and that a crafter is, by definition, a skilled creator. “Mastering a craft does not just mean being able to produce something, but also to understand how it works, to be able to influence, and to alter it. As with art, it becomes a tool for expressing one’s creativity” (ibid).

Christian Maurer, Hanna Hansdotter and Faig Ahmed are three artists working in different mediums but within the border of craft and technology, fusing the two concepts together. What they all have in common is a starting point in the craft, or the knowledge of the craft, which they further interpret differently adapting technology as a medium or expression. Maurer focuses on the history of textile design and the perception of man-made artifacts (Maurer, 2021). She explores and questions the meaning of craftsmanship both in the creative process and in interaction with the viewer. By adapting a computer-aided aesthetic to her hand weaves, they appear as if they were faultlessly produced industrially (fig.3). With this as a design approach, Maurer raises the following stated questions: “Does a handmade object have to look ‘crafted’ and how, consequently, does this affect its appreciation and that of the maker?” (ibid).

Hansdotter’s starting point within the craft is the actual knowledge of glasswork. Hansdotter is a contemporary example of an artist who pushes the boundaries of both the material and the centuries-old tradition of glass blowing which results in contemporary experiences of glass art (fig.4). She describes her practice as an exploration of the link between craft and mass production, where industrial production methods are guided by artistic intentions (Steinsland Berliner, n.d.).

Hannah Levy is a sculptor who in their practice works in several materials and combinations, referring to both fashion and object design (Levy, n.d.). With her sculptures in silicon and steel (fig.5), she creates unexpected meetings between form and material which differ in comparison to how we are used to experiencing them. The objects, or spatial hybrids, which in scale goes up to 2.6x3 m as the largest, create tension between space, object, and viewer. The viewer is left uncertain of what is perceived as reality and subhuman as the expression is blurring the border of what can be considered beauty and discomfort.
2.3 Motive and Idea discussion

This project explores alternatives to the functional and two-dimensional textiles which are currently dominating the area of traditional textiles and the context they historically have been placed in. Swedish traditional textiles are commonly seen as decorative and functional objects both produced in and aimed for the private home, e.g. as table runners, cloths, and wall hangings. Instead, this project aims to acknowledge their spatial recognition and embodiment in a spatial context. The project has been focusing on the traditional techniques simplified overshot and monk’s belt. By discussing alternative applications of the techniques, the work does not only aspire to acclaim historical knowledge of the craft but also to incorporate traditional weaving techniques into contemporary design, contexts, and in relation to other fields of design, e.g. interior design and architecture.

This project is positioning itself within the sphere of creative exploration, exploring the relationship between the hand and the machine, handicraft and technology. By highlighting the complexity of weaving technology, the widespread perception of their opposition as well the hierarchies we see between art forms and practitioners are questioned. Whereas craft is commonly linked to positive associations such as care and emotional value marked by the hand, the project wants to oppose the preconceived notion of technology as a predictable shortcut. In various ways, all previously mentioned references approach the meaning of technology in their processes. Either, by positioning technological tools as equal to the analog tools of the craftsmen, or, by bringing into question if industrial processes can channel artistic intentions and, if so, how our perception of value changes according to that. Like the design-duo, Augmented weaving, this project aims to shed light on the need for a re-definition of the craftsperson during times of exhilarating technology.

The area of exploration is relevant to its time to find contemporary expressions for traditional textiles in a spatial contexts. The meeting between tradition and computer-generated design is also, in this project, believed to bring opportunity for older and younger generations to unify as the crossing can provide exchange and relevance in both directions.
3.1 Method & Development

The design methods used throughout the project are practice-based research consisting of trial and error experiments where each action is dependent upon the output of the last (fig. 7). The experiments are followed up by an analysis demonstrating the potential of the idea, technique, material or other determining factors on which the design decisions have been based on. The term “experimental” related to the field of art traditions, is in the research book IT + Textiles referred to as “a practice of open exploration, an investigation into the possibilities of given materials and technologies with the purpose of exploring and expanding the boundaries of the design space, in order to deepen our understanding of what can be done” (Mazé and Redström, 2005).

Central to the experimental design approach is to explore unexpected design opportunities rather than being problem-solving (ibid). The development of the project has further been leaning against ideas of misinterpretation and de-contextualization, a design method named Out of context: isolated and misinterpreted, by design professor Clemens Thornquist at The Swedish School of Textiles (Thornquist, 2010, p.59). As the describing words imply, the design method suggests different experimental approaches to the art of giving form, eg. by decomposing and composing, rearranging order and logic, deforming and reforming.

Pre-study: Decisions for general setup and directions of the project, eg. loom and material.

Research: archive visits to museums. Researching traditional drafts and patterns. Analyzing artists and designers in the field.

Sketches: digital sketches of patterns, bindings and colors.

Weaving samples: Material explorations, programming, sampling drafts and pattern motifs.

Analysis: Examine the samples to pick up successful and failed experiments. The analysis determines which direction to pursue or which earlier stage is necessary to reassess.

Weaving of final pieces: weaving the final pieces on the jacquard loom. Finishing and mounting.

3.2 Development

3.2.1 Prestudy. Archive visit

As part of the project’s pre-study, two separate archive visits were made. First to the Sörmlands Museum in Nyköping and to Malmö Museum. The visits provided with documentation of historical and traditional drafts, samples and handwritten notes. The main focus during the visits was Swedish traditional textiles. A specific finding at the archive of Malmö Museum came to lay the ground for coming experimentations, linking a historical draft to a contemporary expression.

Inga Wehlin was born 1921 in Kristianstad, Sweden. After her education in weaving, in Stockholm, she resettled in Malmö. At the archive of Malmö Museum, the work of Wehlin can be found in a collection of three weaving books from her education in Stockholm during 1943-1946 (Wehlin, 1943). One sample found in the collection is an example of a traditionally woven Dräll (fig. 8). The characteristic qualities of the technique can be traced in the squared pattern, consisting of alternating blocks. Just as other Swedish traditional textiles in the same technique, this sample is woven in two different materials, in this case, off-white cotton and linen. The combination of bindings and materials creates contrast and movement in the textile, as it shifts from matt to shine, dark to light, depending on from which angle it is viewed. The mentioned qualities as well the pattern in blocks arose strong associations to contemporary expressions of both visual effects and computer-generated aesthetics. This led to a curiosity of exploring traditional textiles with an alternative expression and context.

3.2.2 Glitch art

The glitch art movement developed during the 1970s and can be defined by digital or analog errors made intentionally for aesthetic purposes. This process-oriented art form can be achieved by manipulating digital data and exploiting errors that elsewhere might be seen as undesirable and unwanted. In this project, the relation to glitch art and digital aesthetics centers around the algorithmic expression of structural textiles and their language of building blocks, similar to the nature of technology. The aesthetic is explored to question the prediction of the static and repetitive appearance of traditional textiles.

3.2.3 Traditional drafts

The patterns and bindings of which the project has been based on are material found during the archive visits and in literature. To frame the project, the focus has been on two Swedish traditional overshot patterns, more specifically Dräll, in English called simplified overshot and monk’s belt (Wiklund, 1996).

Simplified overshot and monk’s belt were techniques and textiles commonly produced in the home on floor looms in the form of tablecloths and table runners. In these weaves, one weft system combines with the warp to form a background weave, usually tabby. The other weft system floats alternating on the right and reverse sides of the fabric, producing the actual pattern (ibid). The textile can be characterized by the contrast of weft pattern flotations, often separated in two different colors (fig. 11). Within the family of overshot bindings,
subgenres differ in the required amount of shafts, resulting in different pattern possibilities, from a square and block-like pattern which requires less amount of shafts, to more advanced pattern variations requiring more amounts of shafts. Simplified overshot and monk’s belt are sub-genres to the family term overshot.

Simplified overshot, characterized by the length-wise stripes, is a simplified block weave, meaning only four shafts are needed. The binding is built up on four blocks, creating a patterns part, a shadow part and a plain weave base (fig.12).

Similar to simplified overshot, monk’s belt is also built up in blocks but in solely two. One block that weaves plain weave and the other block weaves rep weave. Both simplified overshot and monk’s belt consist of pattern threads that are woven less dense creating curved floats which lie on top of the plain weave (fig.13). Monk’s belt differs from simplified overshot in the way that the weft pattern alternately floats on the face- and back-side but never into the plain weave, which makes a sharp line between float and plain weave, instead of a shadow

3.2.4 Material

Natural fibers, seen as luxury goods, such as cotton, linen and wool are the most common fibers used for traditional textiles (Wiklund, 1996). In both simplified overshot and monk’s belt, two different fibers, in contrasting colors are commonly used to separate a plain woven base in cotton and the contrasting weft pattern in linen (fig.12). The combination of linen and cotton is crucial to obtain the contrast between luster and matt.

In this project, the material choice in the produced weaves has been based on the intention of creating an artificial contrast to the traditionally made textiles. Therefore, synthetic fibers such as polyester filament, monofilament and polyamide, has been used due to their contrasting properties of being reflective and matt.

3.2.5 Color

The two separating fibers in traditional textiles are also often separated in two different colors to amplify the woven pattern. Colors differ depending on the region where it was produced, but off-white together with blue or red are generally common color combinations across the whole country. In comparison to the lightness and commonly toned-down color combinations, this project has worked with both darker and more saturated colors which strengthen the artificial and computer-generated design aesthetic, such as gradients in metallic silver, purple and black.

A variation of saturated colors was selected using Itten’s color wheel. The variation of colors, covering the full-color wheel, provided space to go in multiple directions and combinations of color strategies. Each color was printed separately on transparent paper. By overlaying the printed color sheets, different color combinations were tested (fig.19). Yarns were thereafter sources to match the selected color combinations (fig.20). The combinations were also arranged accordingly to the maximum of six yarn feeders that the jacquard loom is equipped with.

3.2.5 Sketching methods

The sketching methods has been a fluid conversation between analog and digital, meaning, sketching by hand, in Photoshop, in the weaving programs Weave Point and ScotWeave and directly in the woven materials.

3.2.6 The jacquard loom

All the jacquard woven experiments and final pieces in this project have been performed on a Staübli jacquard loom (fig.16). The loom, which consists of 5 repeats of 31,8 cm, has a total width of 159 cm and 840 hooks. The warp material is monofilament polyethylene 0,17mm and has a warp density of 26,4 threads per cm.

From a technical point of view, the two necessary steps in jacquard design are first to design a surface pattern and second to replace each color area of the design with a weave structure (Salolainen, 2022) (fig. 38-43). This possibility opens up for alternative expressions of traditional textiles which has been restricted by the handloom. To work on a jacquard loom brings a certain freedom in terms of pattern and bindings. Besides exploring the relationship between weaving and technology through industrial weaving, the choice of working on a jacquard loom was a natural decision to be able to work with distorted patterns and the thin warp material, in a way that could not have been possible in handweaving.

3.2.7 Digital tools

As the language between generated patterns and woven cloth are build up in a system of pixels, all the patterns in the collection have first been made in Photoshop to later on be programmed in Scot Weave. All patterns has undergone a development from simplified hand or digital sketches in black and white to repeated seamless patterns, distorted and manipulated in Photoshop (fig.17). The manipulation phase is intuitive and the process of disruption is made with filters and tools such emboss, blur and noises.

3.2.8 Programming

After each seamless pattern was made in Photoshop, it is programmed with the bindings, yarn selectors and manual gradation in the software Scot weave (fig.18).
Fig. 19 Color sketching.

Fig. 20 Yarn/color sketching.
3.2.9 Pattern development

When returning to previous work and personal aesthetic, alongside the initial sketches of this project, a common factor and a starting point came to be defined by the keywords “distortion” and “manipulation”. As weaving is a rule-based art form, to create a pattern means to elaborate within a set of rules (Glass Bead and Smith, 2017). Traditional textiles are commonly constructed with a strict static phase, repetitive and small in scale, adjusted accordingly to the rules. An effective way to break these properties was to introduce its opposites. These opposites came to be defined by scale, repetition, color, material, and layers.

Scale and repetition. Traditional simplified overshot and monk’s belt are as previously mentioned often small and repetitive in scale. In comparison to this, each textile of the collection has been constructed with solely one repeat on the height with the aim of creating a continuously developing pattern (fig.22). Instead of reading the textile as one similar repetitive unit, the purpose of the single repeat strive to break the repetition and activate the eye of the viewer to read the full development.

Layers. The traditionally woven overshot and monk’s belt are woven as a one- or two sided single layer cloth. The textiles of this project has approached this fact in three different ways. “<3dream glitch<3 is woven with two layers with different faces and bindings, aiming to create a depth and three-dimensional effect. Pixel rain consists of one layer but enhances the transparency qualities. Drioller is woven in two separated layers with areas of intersections, making the textile two-sided and reverse in its colors.

Color and material. Instead of using natural fibers, polyester, monofilament and polyamide were introduced to enhance the artificial aesthetic. They provide shiny, transparent and saturated qualities.

3.2.10 Pattern development 1 - “<3dream glitch<3

The first experiments of “<3dream glitch<3 were based on digital sketches (fig. 23-25). The sketch is illustrating a two-layer double weave with a gradient background and a water-like transparent top layer in a traditional overshot pattern. In comparison to the traditional overshot, which is woven in one layer, this fabric was woven in two. The bindings of simplified overshot and monk’s belt were translated and programmed in Scot Weave. The alternating float threads in two different materials created movement and shiftings in the textile (fig.30), which was a further trial in breaking the repetitive look of the traditional textile. The first sample, with squares in size 2x3cm as the biggest, showed intriguing results when the traditional patterns were scaled up, although, the pattern still appeared too repetitive (fig. 32). Further experiments were done in order to compare scale and transformation within the pattern.

The first samples were programmed as both a two-faced and two-layered double weave with areas of interlacement. This furthermore differentiates “<3dream glitch<3 from traditional simplified overshot and monk’s belt, as the traditional techniques have a front and a backside that is inverted, but the general appearance of the two sides are the same. In this case, the pattern is woven with floatations on the facing layer, with a backside in a gradient plain weave and areas of interlacement in twill (fig.44). Due to the too many areas of interlacement, the textile was experienced as a single cloth which became undesirable thick with an uneven surface. Further digital sketches and woven samples were carried out to compare the scale and repetition of the characteristic squares. Those experiments failed in terms of creating a non-static pattern (fig.38-40) and the first woven samples were therefore revisited and reworked.

Further trials were made when simplified overshot bindings were modified by switching the weft order of a structure in Scot Weave. The modification, which can not be achieved in hand weaving, appeared to be a good method of working with a simplified binding that can create multiple nuances with solely four colors (fig.54-55). Despite the fact that the samples showed good results as a modification of the technique, the visual expression differed in comparison to the visualization of the aiming result, and the output led back to previous experiments.

To enhance an artificial aesthetic, different material combinations were tried out. The introduction of steel thread as an alternative material did not show good result as woven fabric, as the information of the pattern was lost when the steel thread was placed in the floatations. Although, the sample showed compelling results of transparency (fig.34-35). The combination of monofilament, lurex and polyester showed good results in terms of imitating the digital sketch (fig.26) of a liquid top layer where areas of the design was more translucent than others.

A new version of previous samples was woven in scale 1:1, taking into account the outcome of previous pattern and material explorations. This time, the textile was woven in two separated layers without interlacing areas. Separating the layers added transparency and depth in color in the areas of transparency and allowed space to explore contrasting areas of matt and reflective qualities (fig.58). Another development of this sample was to break the rule of the woven techniques by disconnecting the connecting squares of the traditional pattern (fig.42,43) by the placement of bindings. This created both a positive and negative space in the pattern. In this way, a second pattern was created within the first pattern.

Further color and material exploration of this pattern was executed...
until a desirable combination was found. The selected color combination gradates in the top layer from silver, to purple to matt purple. In the second layer it gradates from dark blue to green. The pattern is adapted to the width repeat of the jacquard loom but has solely one full repeat of 190cm. This was made in order to break the neat and repetitive look of traditional overshot. The final pattern evolves from a traditional trim and smaller squares in high gloss lurex and polyester, to matt and extended squares which has been dragged out of their original form and context.

To enhance an artificial aesthetic, details such as the exaggerated long monofilament fringes was added.
Fig. 32. Sample 4. Two layer double weave. Lurex, monofilament and polyester. Material and p

Fig. 33. Sample 4. Big scale

Fig. 34. Sample 5. Two layer double weave. Steel thread, monofilament and polyester. Front and back. Exploration in transparency and rigidity.

Fig. 35. Sample 5.

Fig. 36. Sample 6. Two layer double weave. Steel thread, monofilament and polyester. Front and back. Material and color exploration.

Fig. 37. Sample 6 detail.

Fig. 38. Digital sketch for sample 4 (page 34). Manipulation of squares in height.

Fig. 39. Digital sketch. Random manipulation, removal of squares.

Fig. 40. Digital sketch for sample 7 (page 36). Manipulation of scale of the squares.

Fig. 41. Digital sketch for sample 7 (page 36). Creating a pattern inside of the pattern.

Fig. 42. Digital sketch for sample 7, repeated pattern.

Fig. 43. Digital sketch. Random manipulation, removal of squares.
Fig. 44 Sample 7 front. Exploring pattern and color.

Fig. 45 Sample 7 front detail.

Fig. 46 Sample 7 back. Exploring the translucency from the front layer.

Fig. 47 Sample 7 back detail.

Fig. 48 Sample 7 front and back. Exploring a manipulated squared pattern on the front layer and a figurative motif as backside.

Fig. 49 Sample 7 back with projected light from back. Exploring translucency.

Fig. 50 Sample 6 with projected natural sunlight from right. Light and material exploration.

Fig. 51 Sample 9 with projected artificial light from light table, from below. Light and material exploration.

Fig. 52 Sample 6 with projected natural sunlight from right. Light and material exploration.

Fig. 53 Sample 3 with projected artificial light from light table, from below. Light and material exploration.

Fig. 54 Sample 8. Color exploration.

Fig. 55 Sample 8. Color exploration.
3.2.11 Pattern development 2 - "Pixel rain"

The second pattern of the collection evolved from samples and sketches which had earlier been disregarded in the process of creating pattern 1. When earlier samples were revisited, notice was taken of the potential in working in one instead of two layers. Separating the layers added to desired qualities of transparency, and was even more emphasized in the positive space of the pattern (fig.65,66). This is due to the binding of a plain weave base woven in monofilament with fine polyester floats lying over it.

Earlier experiments with different projected light settings were taken into account as the process showed how the textile is experienced differently depending on the light. The pattern and bindings of the textile become visible in the light-exposed areas, meanwhile, the woven information disappears where the shadow hits (fig.78-81). These shifting properties became qualities that the design is making use of as a space divider or curtain.

Additional digital sketches were developed and a selection of those was woven and analyzed (fig.73-75). The samples which came to be discarded were aimed to illustrate a gradient from opaque to transparent but failed due to the matt polyamide which contracted and distorted the pattern in an undesirable way (fig.67). The sample also proved that the largest squares of the pattern, 8cm in width, were too big to hold up the floats, which gave unwanted effects of loose threads. The pattern was further reworked. The construction of the pattern emphasizes the similarities between digital aesthetic and weaving drafts which is built up by graphic sequences consisting of squares and pixels.

To connect pattern 1 with pattern 2, digital color sketches of the gradient were made to compare different sizes of the gradient. A gradient of two colors showed both a more pleasing and more smooth result in contrast to a gradient of three colors. After trying different color combinations, a combination of the complementary colors turquoise and orange/copper was chosen. The turquoise yarn was already blended with the orange, which made the gradation even smoother.
Fig. 66 Sample 10. Exploring qualities one layer.

Fig. 67 Sample 11 woven in polyamide. Analysis of contractions.

Fig. 68 Sample 12 with loose floats. Front.

Fig. 69 Sample 12 with loose floats. Back.

Fig. 70 Sample 13 with loose floats. Back. Exploring transparency and contractions of the polyamide.

Fig. 71 Digital sketch. Manipulation of pattern.

Fig. 72 Digital sketch of light and manipulation of pattern.

Fig. 73 Development of digital sketch.

Fig. 74 Development of digital sketch.

Fig. 75 Development of digital sketch.
Fig. 76 Sample 14. Two layer fabric with interlacements. Exploring the changes of qualities with woven interlacements.

Fig. 77 Sample 14. Detail.

Fig. 78 Sample 15. Double weave with separated layers. Projected with natural sunlight from the side. Exploring transparency.

Fig. 79 Sample 15. Detail. Projected with natural sunlight from the back. Exploring transparency.

Fig. 79 Sample 15. Detail.

Fig. 80 Sample 16. In scale 1:1.

Fig. 81 Sample 16. With projected light from back.

Fig. 82 Sample 16. Sketching in fabric.

Fig. 83 Sample 16. Sketching with light projection.

Fig. 83 Sample 16. Sketching with light projection from the backside.

Fig. 84 Sample 16. Sketching with light projection from the backside.

Fig. 85 Sample 16 Detail.
Pattern development 3 - “Dräller”

When constructing pattern 3, the inspiration came from traditional textiles with more figurative variation patterns, in comparison to the previous more static pattern in blocks. Even though the decorative patterns with more variations are similarly built up in blocks of squares, the appearance is more ornament-like in the form of trim and "flower" motifs.

Dräller is exploring the transformation of shape from square to distorted liquid form. As the hand woven traditional textiles are built up in blocks, it is not possible to achieve soft and irregular forms without handpicking. The long continuous pattern report is designed for the viewer to read the textile from above, from the traditional initials and fixed form, to liquified and deformed (fig. 95).

The traditional textiles were, as earlier mentioned, often woven in two contrasting colors - light off-white and blue. A off-white cotton base woven as plain weave, with linen floatations in color. The color choice of the third pattern were based on creating a dark contrast to the traditional, with a dark blue matt base, and reflective floatation in green. The bindings are a combination of satin, twill and plain weave in floats, woven as two layers with interlacements, creating a two-sided textile.

The title *Dräller* both refers to the Swedish name of the technique dräll or overshot, but also the double meaning of the word as a verb. In Swedish, the word *dräller* or *att drälla*, can be translated to *screw up, be messy or mess around*. With the tablecloth as a starting point and object, the title hints about something that has been messed with, in this case, the manipulation and deformation of the traditional pattern image of the tablecloth.
Fig. 96 Sample 17. Two layer double weave with interlacemnts. First woven sample with different densities.

Fig. 97 Sample 18 Double weave with interlacemnts. First woven sample with different densities.

Fig. 98 Sample 18 detail.

Fig. 99 Sample 19 Detail in the loom.

Fig. 100 Sample 19 Detail, off the loom. Analysis of reflecting qualities.

Fig. 94 Digital sketch. Manipulation of pattern.

Fig. 95 Digital final pattern.
3.3 Prototyping

To achieve the described motivation of the project of giving the traditional textiles spatial recognition, in comparison to the function they historically have served as decorative home textiles, steel pipes came to serve as the body of giving pattern 1 a form. The choice of steel pipes as a material was further experimentation to challenge the traditional expression and its original context. The shape was designed to enhance the shifting qualities of the textile, with the initial idea of a distorted table which hints about its origin as a tablecloth. Although, the abstract form allows space for open interpretation and is a prototype that suggests how traditional textiles can be introduced to be further more explored within architectural structures.

Before deciding on introducing steel pipes as mounting material for piece 1, a workshop was made to test and sketch directly in the woven material. Different arrangements of presentation and form were primarily tested (fig.109-114). The tests showed that when light, in a commonly arranged room setting, is projected from the ceiling, the light becomes a disadvantage to the textile when arranged hanging two-dimensionally. The reflective qualities of the silver lurex material in piece 1 attracts the majority of the light which results in a loss of woven information, which overlooks the desired qualities of transformation between transparency and opaque, reflective and matt. The striped gradation also becomes dominant to the general appreciation of the piece in this arrangement.

The qualities of light were significantly different when the textile was arranged flat on the floor, although, this arrangement does not work in favor of the motivation of raising the value of the textile as an alternative expression of traditional textile.

A prototype was made where eye-lets were attached to the sides of the textile, to later on be attached to the steel frame with steel-wire. The method showed good results of giving the fabric tension, but was difficult to get an even tension. Further trials were tested when using the steel form as a skeleton, but draping the fabric on top of it (fig.115-117). The draping was visually appealing but not in the way that the project was aiming for, as the combination of color and material resulted in a soft and sweet expression. Also, it did not respond to the project’s motivation of presenting traditional textiles in a way we are not used to experiencing them. A draped fabric felt obvious with predictable shapes. A decision was thereafter made to return to the steel frame and mounting by using tension with steel wire and eyelets.
Fig. 109. Sample 20 and 21. Two layer double weave. Lurex, monofilament and polyester. Front.

Fig. 110. Sample 21 Lurex, monofilament and polyester. Front. Test of light reflection.

Fig. 111. Sample 20. Sketching with fabric on form. Test of light reflection and material qualities.

Fig. 112. Sample 21. Sketching with fabric on form. Test of light reflection and material qualities.

Fig. 113. Sample 21. Detail. Test of light reflection and material qualities.

Fig. 114. Sample 20 back. Testing the scale of the gradient.

Fig. 115. Sample 21. Sketching with the fabric on form. Draped.

Fig. 116. Sample 21. Sketching with the fabric on form. Draped.

Fig. 117. Sample 21. Detail.
3.3 Finishes and attachment
Due to the transparency of the fabric, a welding wheel machine was used to seem the sides of the textiles. Compared to handsewn seems in monofilament thread, this technique showed the best results for finishing the edges. For the mounting of piece 2 and 3, small eyelets was attached to the top seems to be able to drape them as curtains.

Technical and practical reasons with the machine made it difficult to have fringes on both of sides, therefore, a 134cm long fringe was added to one of one of the sides to exaggerate the artificial look of <3dream glitch<3.

4. Result & Presentation
The result of this project consists of a collection of three woven textiles which explores the meeting between the traditional techniques of simplified overshot and monk’s belt, computer-generated tools and a digital aesthetic. The weaves demonstrate the potential of how tradition and contemporary expressions can coexist to create alternative and contemporary textile expressions for spatial contexts.

In comparison to traditional textiles aimed for the private home, the textiles in this project manifest its spatial recognition in a spatial context in terms of scale, material, color and repetition.

By playing with qualities such as scale, the viewer is confronted with the way we are used to experiencing the traditional textiles. By enlarging both the pattern motif and the scale of the entire textiles, all three textile of the collection is suggested to be experienced as textile show pieces in a spatial context. Meanwhile <3dream glitch<3 becomes a three-dimensional textile placed in the middle of a space. Pixel rain and Dräller are presented as two-dimensional hanging textiles, which can be arranged to suit commercial purposes within e.g. interior design.
4.1

Title: “<3dream glitch<3”

Size: 80x70cm

Machine: Staiblji jacquard loom.

Technique: Twill, Plain weave, Plain weave with floats.

Placement: Centered in spatial setting with possibilities of walking around it, preferably on a podium.

Fig. 119 Selected weft yarns and colors.

Fig. 120 Twill.

Fig. 121 Plain weave with floats.

Fig. 122 Twill and plain weave.

Fig. 123 Plain weave with floats.

Fig. 124 Screen shot from Scot Weave.
4.1.2

Title: "Pixel rain"

Size: 150x280cm

Machine: Staubbli jacquard loom.

Technique: Twill and plain weave with floats.

Placement: Hanging draped on metal curtain rod with steel rings.

With end touching the floor.

Fig. 126 Selected weft yarns and colors.

Fig. 127 Twill

Fig. 128 Plain weave with floats

Fig. 129 Mounting example

Fig. 130 Screen shot from Scot Weave.
4.1.3

Title: “Dräller”
Size: 150x220cm
Machine: Staiblli jacquard loom.
Technique: Satin and twill.
Placement: Hanging draped on steel rod and steel rings. With end touching the floor or placed on podium to gain height.

Fig. 132 Selected weft yarns and colors.

Fig. 133 Warp dominant satin
Fig. 134 Twill
Fig. 135 Satin
Fig. 136 Weft dominant satin

Fig. 137 Screen shot of Scot weave.
5 Discussion & conclusion

5.1 Discussion

Similar to Mazé and Redström’s (Mazé and Redström, 2005) description of an experimental design approach, this project is exploring unexpected design opportunities rather than being problem-solving. By suggesting alternative applications for traditional textiles in general, and more specifically in this project, simplified overshot and monk’s belt, the work does not only aspire to acclaim historical knowledge of the craft but also to incorporate traditional weaving techniques into contemporary design, contexts and in relation to other fields of design, eg. interior design and architecture.

With a reflective design approach, the project means to not solely design for function but for reflection. Reflections might branch out in personal reflections upon textile heritage or create relevance for a younger generation to gain a relation to traditional textiles in a time and culture where they appear as absent. It might be a subject of exchange between not only one’s own, but also others’ cultures. Reflection as in questioning what is traditional and why in relevance to technology and expression.

The conclusion that physical craft is crucial to the understanding of creating with software answers the previously stated question if industrial processes can channel artistic intentions. Hansdotter’s glasswork is exploring the interplay between craft and mass production, where industrial methods are steered by artistic intentions. Although Cloth Decoded has similarly to Hansdotter, been exploring the possibilities of working with artistic intentions along industrial production methods, the intention has been to investigate the potential of fusing the them, finding a shared space where both the machine and the knowledge of the craft face equal limitations or push each other to alternative frontiers.

The outcome of the project proposes that the machine itself cannot channel artistic intention, it only serves as means to reach the artistic intentions together with the human knowledge of the craft, similar to the tools of a ceramic or the tools of a glassblower. Artistic intentions utilizing machinery may be defined by the artistic skills of translating the knowledge of craft and craft technology to machine, programming or software. This statement corresponds with the claim of the duo Augmented weaving (Studio Bon, 2022), which suggests a need of a re-definition of the crafter. It also suggests a need to change the viewer's approach to technology as a tool and to see the value of technological tools as equal to the analog tools of the craftsmen.

While Maurer questions the meaning of craftsmanship by asking if a handmade object must visibly carry the look of manual labor (Maurer, 2021), Cloth Decoded takes it a step further. The project argues that the term “crafted” should simply not be associated with manual work only. Discussions on craftsmanship often refer to the term “the mark of the hand”, emphasizing the positive aspects of an individual’s imperfections behind faults and errors. However, Cloth Decoded challenges this notion, suggesting that there is potential in exploring technical bugs and errors equal to humans. Just as faults can be done by the crafter, so can the imperfections arise from the collaboration between the crafter and the tool, or the tool/machine itself.

5.2 Conclusion

The project has strived to create moments of tension between traditional textiles and in which way we are used to experiencing them. The exaggeration of opposing qualities confronts the viewer to see the textiles in another context; enlarged, saturated, manipulated, etc. They suggest an application for spatial contexts both as show pieces as well as for commercial purposes.

Although the project has been based on traditional drafts, it demonstrates the likenesses with contemporary graphics, pixel art and computational structures. Both textiles of now and then are digital in their structures, where pixel and thread is communicating in binary code, same as a computer system. But, they are different in our analog relationship to them, as they in this project have undergone a transformation from decorative function, to what can be seen as design for reflection.

The possibilities of the jacquard loom alongside the use of digital software, has in this project proved its technical freedom. These factors are proved in terms of working in the chosen materials, liberating the form of a square to irregular without handpicking. It allows traditional techniques restricted to the handloom to be revisited and further experimented with, particularly within contemporary expressions and techniques.

Conclusions can also be drawn that the preconceived notion of technology as a shortcut is misleading and misunderstood, as an understanding of physical craft is crucial to the understanding of creating with software. As in digital weaving, controlling software or machine requires knowledge of craft where decisions and conclusions of quality, behavior and finishing are configured already in the construction of the digital file.
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7. Table of figures.

All images are the authors own unless stated.

Representative images of work and documentary images fig. 5, 10, 12, 82, 83, 85, 108, 131. Photographs by Alexis Rodriguez Cancino.