9-2012

Can We Study Textiles From Other Cultures Without Ethnocentrism? The Andes As A Case Study

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TEXTILE SOCIETY of AMERICA
Textiles & Politics
13th Biennial Symposium × SEPTEMBER 19-22,2012 × WASHINGTON, DC

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In 2010, on the occasion of the re-publication of an article written more than twenty years ago ("Les techniques de tissage ont-elles un sens ?")[1], I was asked to explain the context of its conception. Preparing a short introduction to this new publication, I remembered the instant, 24 years before, when I suddenly realized that I would not be able to find an answer to my question as long as I approached the issue with a Western conceptual model. This model considers the orientation of a textile through the direction of its warp: this is done when describing any kind of woven textile and specially those woven in tapestry. This is how scholars always approach the subject, myself included, because we share a common textile culture and descriptive language. And when we have pieces woven in a foreign world, this common textile culture shapes our way to think about and describe textiles and impedes our understanding of how those who originally made them might have considered them. Our way of looking at textile techniques is, in fact, not universal[2].

The following pages form an attempt to make us more aware of this problem and to help us exercise our mind to escape the determinism of our own textile culture. First, the warp direction problem will be presented as exemplified in that re-published article referred to above, because it is so simple and visual that it provides a clear idea of the differences that might exist between two viewpoints on the same object. Then, in a less concise way, we will examine the case of present weaving practices about which opinions vary because of the terminology used to describe them and the contexts in which they can be observed. This gives a specific focus to an observation on changes in weaving in Taquile made many years ago by Elayne Zorn, the dear friend and colleague to whom this TSA 2012 meeting Andean session is dedicated.

Why highland tapestry tunics always have their warp horizontal in the finished garments?

When I wrote the first version of the "horizontal-vertical" article in 1988, I wanted to understand why highland tapestry tunics have always their warp oriented in the horizontal direction in the finished garments, as evidenced by Inca, Huari, and Tiahuanaco examples (Figure 1a). Another observation then accessible was that the early colonial female shawls and dresses woven in tapestry according to Inca standards had their warp oriented in the vertical direction (Figure 1b)[3]. Therefore, tapestry weaving with an inclination for designing garments with the warp horizontally oriented was not a general Inca standard, and had probably something to do with the function of the garments according to Andean female and male opposition. The same opposition was equally observable between other versions of the same garments woven in a different way, with warp-patterned techniques from Inca time, and probably earlier, until today (Figure 2ab)[4]. But this observation left a

[1] Desrosiers 2010, re-edition of the 1988 article in the same periodical.
[2] For a similar position on Andean aesthetics, see Femenias 1988.
[3] See for instance Phipps 2004: 28 and cat. 22, 38-42.
[4] As suggested in Desrosiers (2010: 271-272), commented by Ulloa (1992) and Boytner (2004), and demonstrated in several occasions, for instance Minkes (2005), female and male garments from the extreme south of Peru and the North of Chile do not fit within this schema. But the same horizontal/ vertical opposition works in general, using other features, for the Peruvian central and south coast garments from Paracas to the Inca, and for several Amazonian present garments. These features concern mainly the direction of the neck and arms opening, sometime completed by the direction of the

major question to solve as the opposition was reversed: females wear their warp-patterned shawls and dresses with the warp oriented horizontally, while men wear their warp-patterned tunics and ponchos with the warp oriented vertically. A decisive help came from Bertonio who reported, in his early 17th century Aymara Dictionary, that during the *succullu*, an Aymara children's rite of passage, girls received a skirt ornamented horizontally with many red threads, while boys were dressed with a special black tunic crossed vertically by three red threads[5]. Therefore, the unique way to compare female and male garments from the highlands was not through the direction of the warp, but rather through the direction of the threads appearing on the face of the textile – that is to say the direction of the wefts in the case of tapestry, and the warps, in the case of warp-patterning. There, whatever the weaving technique employed, the apparent threads were, and still are, with a few exceptions, horizontal in female garments and vertical in male ones (see the red arrows on Figure 1 and 2).

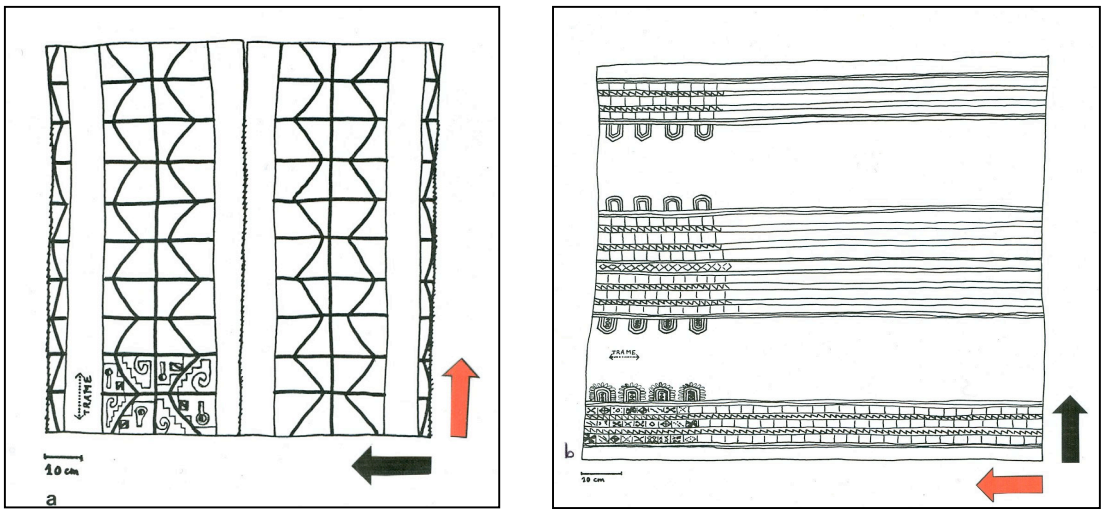

Figure 1 – Huari male tunic (a, left) and Colonial female shawl (b, right) woven in tapestry technique (Col. A.G. Glassel Jr, Houston and Abegg Stiftung, Berne, 416). The black arrows indicate warp direction. The red arrows indicate the visible threads direction.

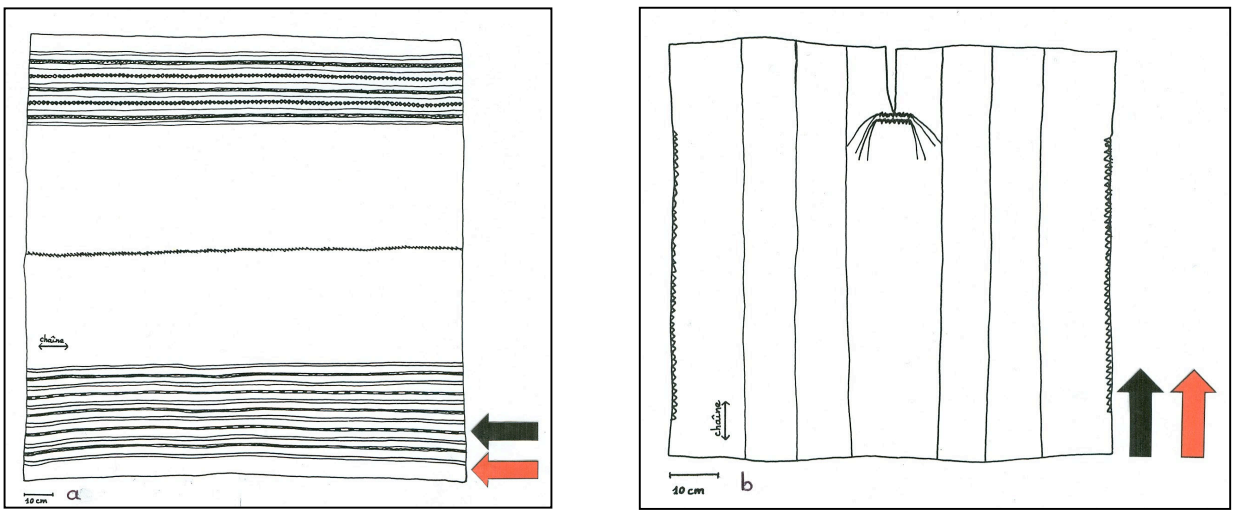

Figure 2 – Warp-patterned Aymara female dress (a, left) and male tunic (b, right) from the Colonial Period (after Adelson and Tracht 1983: cat. 1 and 36). The black arrows indicate warp direction. The red arrows indicate the visible threads direction.

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visible threads (Desrosiers 2010). That is to say that the opposition works at least in a geographical context corresponding to central and south Peru, whatever the longitude, plus some areas of Bolivian highlands.

[5] Bertonio 1984: part II, 323.

When one extends the logic of conceptual practices to its limits, it can be hypothesized that in the highlands where complex warp-patterned weaving had probably been developed well before the beginning of our era[6], men's tapestry tunics might have been woven with their visible threads – the weft ones – vertically in order to fit with models established earlier with their warp-faced prototypes. This is consistent with the way Young-Sánchez explains the construction of several unusual Tiahuanaco tunics woven with interlocked tapestry sections inserted in various ways within a ground of warp-faced plain weave[7]. This new hypothesis does not fit with the high status normally attributed to tapestry, and more recently to Inca weft-faced weaving in general[8], but it seems potentially worth to considering for at least two reasons. First, because precious warp-faced striped plain weave tunics are documented to have been used in the Lake Titicaca area before the end of Tiahuanaco, as shown on ceramics found in the Pariti Island. The « *señor de los patos* » wears a tunic comparable to the exceptional ancient Aymara pieces preserved in the ritual bundles from Coroma (Bolivia)[9]. Second, for later periods, some female garment examples woven with weft-faced techniques show design compositions, motives, and sometimes actual technical features so comparable to warp-faced pieces that parallels must be considered. This is clear for early colonial period tapestry pieces[10]. And this has been noted for Inca examples woven either with weft-faced and warp-faced techniques so close in comparison, that it is impossible in some cases to identify which of the two techniques had been used[11]. One may hope that new high quality textile discoveries will bring the necessary data to understand these remarkable parallels.

Now we shall examine with more details another question: *Why so many jalq'a female pieces of medium or low quality have been and still are today woven with warp-faced double weave rather than the complementary-warp weave generally associated with Jalq'a identity both when observed in 1983, as today?* One interesting aspect of this question is that Elayne Zorn had noted the same change in 1988, though on high quality textiles, the well known *Calendario* belts, woven in Taquile Island. This question requires the detailed comparison of the two techniques.

When we compare complex weaves "with two complementary warps" and "warp-faced plain weave doublecloth", we tend to consider the second as more complex than the first. It is even considered as the most complex weave in general because double weave structures need multiple sets of threads - at least two warp sets and two weft sets -, while basic complementary-warp weaves require two warp sets and only one weft set[12]. But what is true for the weave structure does not work the same for the technique of producing them on the loom. We shall see that if we consider weaving practices, "complementary-warp weaving" appears much more complex than "warp-faced double weaving" and this is probably why inexperienced weavers imitate the very complex complementary-warp 2.1 twill woven Jalq'a textiles using a warp-faced plain weave double weaving instead.

The Jalq'a live in the valleys west of Sucre, Bolivia. Many aspects of their textiles, in particular their specific red and black imagery representing the under-world – *ukhu pacha* –have been studied since 1985 by Verónica Cereceda and the anthropologists from ASUR[13]. In 1983, during a few months fieldwork in the community of Isloco (not far from Potolo, at the heart of the Jalq'a territory), I had

[6] Desrosiers 2008 and 2012. The Huaca Prieta examples (Bird 1963) are much earlier attestations of warp-patterning but their North Coast location and the lack of comparative material from the highlands during the Preceramic period makes them difficult to interpret.
[7] Young-Sánchez 2004: 41, 50.
[8] Rowe 1995-1996 : 11.
[9] Sagárnaga and Korpisaari 2005; Bubba and Albó 2010
[10] Desrosiers 2010: note 18; Phipps 2004 : 30-32.
[11] Rowe 1995-1996: 8.
[12] Rowe 1977: chap. 10 and 12
[13] Cereceda, Dávalos and Mejía 2004; Cereceda 2006: 130

investigated the weaving practices of Jalq'a weavers, in particular their 2.1 twill complementary-warp weaving which characterized all their textiles except for some belts woven in double-weave. At that time, I had noticed that the conceptual logic and mathematical orders involved in their practice were quite different. In order to explain how this happens, I shall now examine how they set up the loom and weave today the two different techniques, focusing on three steps of the *chaîne opératoire*: warping, making the separating tools, and selecting the warp threads to build the design[14].

1st step – Warping – In both cases, the two warps are measured out in a figure-eight around the two warping-bars maintained above the ground by four stakes. The two threads – one red and one black – are warped together in a single movement (Figure 3). These threads form a conceptual pair during the whole process. Selecting one thread of the pair means that the other thread, of the opposite color, will appear on the back of the textile to build a symmetrical design with opposite colors. It is a very simple logic and it works admirably. These pairs of threads can be considered as a material implementation of the complementary principle related to Andean dualism. The terminology we use gives the impression that this principle is involved only for the so-called "complementary-warp weaving", but it is also a necessary part of selecting threads for double-weaving as well[15].

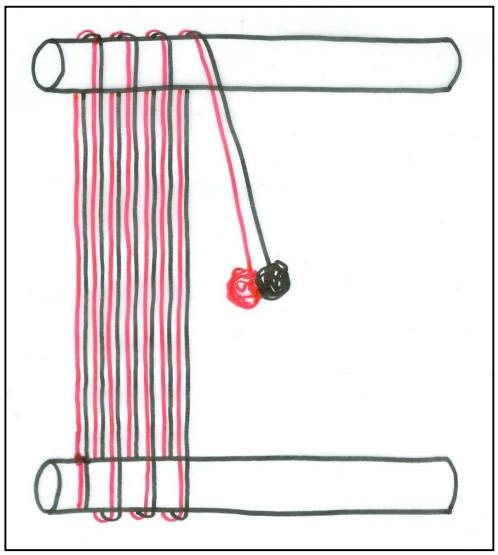

Fig 3 – Warping pairs of threads – red and black - in a figure-eight.

2nd step – Making the separating tools – heddles and shed-rod – results in substantial differences between the two techniques. Because of the preparation of the warping in the figure-eight, the uneven pairs of warps (ie the 1st, 3rd, 5th etc.) located above the low warping-bar, cross in the middle with the even pairs of warps (ie. 2nd, 4 th, 6 th, 8 th) set above the upper warping-bar (Figure 3). For double-weaving, the shed-rod is introduced under the even pairs and the heddles are built on the uneven pairs (Figure 4a)[16]. For complementary-warp weaving, the uneven and even pairs of threads are reorganized so that the red warps cross simply with the black ones. The shed-rod is then passed under the threads in the upper position, for instance the black ones, and the heddles are built on the other color – the red ones (Figure 4b). In the first case, the conceptual pairs are kept together in close proximity, while in the second case, they are in opposite positions.

[14] The other steps are no relevant to the question under consideration. Many data come from a recent period of weaving, in July 2012, with Claudina Anagua Piris, a knowledgeable Jalq'a weaver from ASUR.
[15] Doyon-Bernard (1990) hypothesizes the application of this principle to weave warp-faced plain weave with warp substitution during the Early Horizon.
[16] In 1983, some weavers were making two more heddles. This practice, which does not change fundamentally the way threads are selected, has been presented in Desrosiers 2010

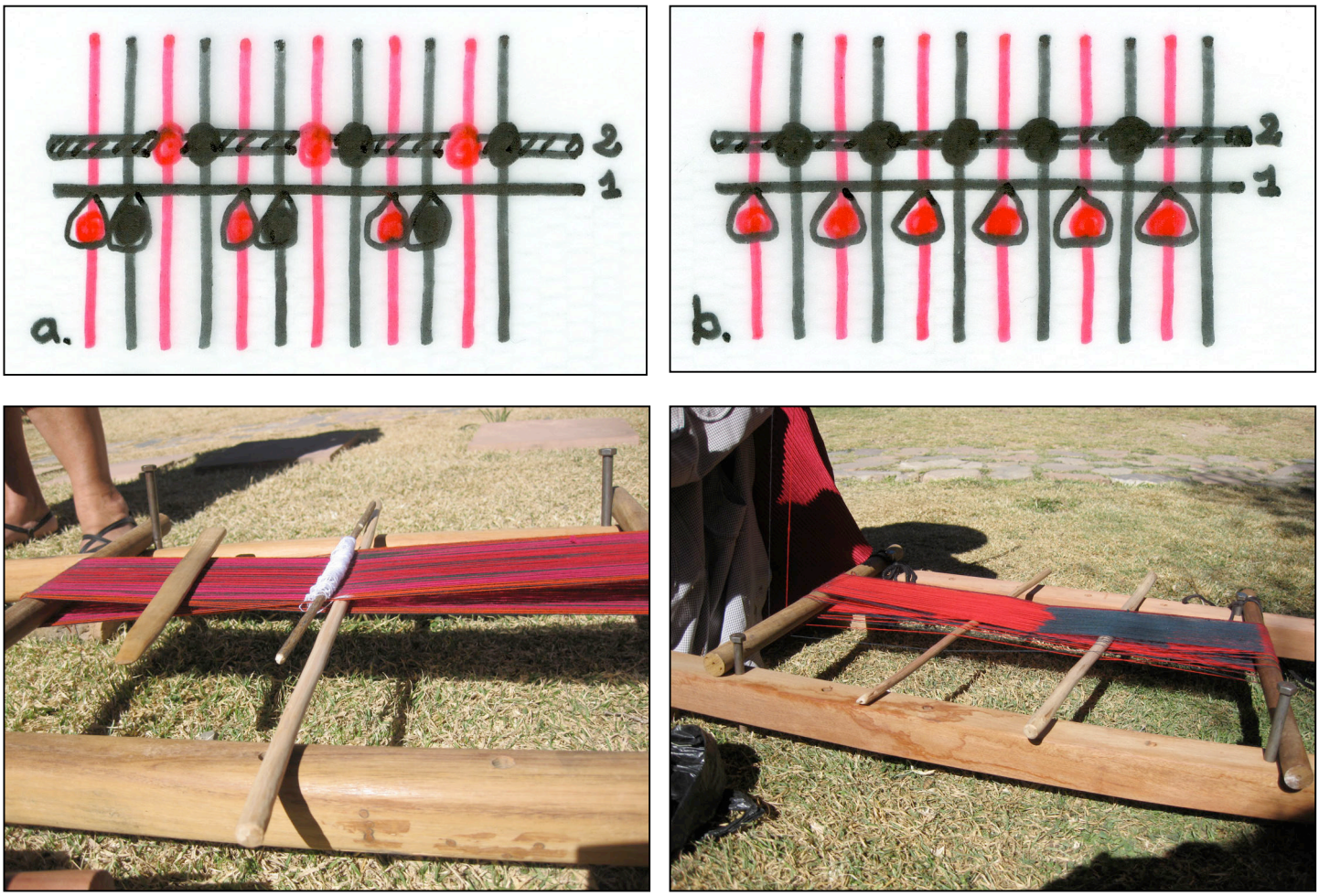

Figure 4. Making the separating tools: heddles and shed-rod for double-weaving (a, left) and for complementary-warp weaving (b, right.)

3rd step – Selecting the warp threads is where the significant differences can be identified. It begins after the completion of the transversal selvage on the definitive lower loom-bar.

* *In the case of double-weaving*, the weaver works alternatively on the uneven pairs (controlled by the heddles) and on the even pairs (controlled by the shed-rod) (Figure 4a).
Working on the uneven pairs, she chooses one thread of each pair so that the threads to appear on the front are picked with the needle, while the threads to appear on the back, in order to create the symmetrical design with opposite colors, stay underneath the needle (Figure 5a). This is very inventive as the two warp openings necessary to introduce the weft for the two faces are obtained through a unique selection. After introducing the uneven weft for the front, she simply adds the even threads on the shed-rod to the selection so that the threads left under the needle appear alone on the back, ready to introduce the second, weft to bind the uneven back yarns.
The same process is then engaged with the even pairs following the same rules and the addition of the uneven threads to the selection in order to obtain, again, the back of the textile with a symmetrical design and opposite colors. The logic of warp-faced double-weaving is simple and very effective. But the easy thread selection does not mean that weaving advances fast as each row requires the introduction of a second weft after some thread manipulations required to get the right threads on the back.

Figure 5. Double-weaving: selecting the threads (a), woven design (b), and draft on appropriate grid (c)

As shown on the design drawn on a grid representing warp-faced plain weave (Figure 5c), each selection (one for each front weft) will make an independent punctual unit of the motive. Therefore, the only decision to make is: "to take the red or the black thread of each pair in order to compose the desired motif on both sides" as if the artist was coloring each row of "points" with two pencils of different colors from right to left, and one row (or weft) after the other from bottom to top. The creative capacity of double-weaving is great. The resolution of a textile design will depend on the number of "points" available to make a design similar to the number of pixels of a given computer screen indicates its image resolution. The higher the density of the physical threads, the finer the design might appear on the flat surface of the textile. But the Jalq'a weavers usually do not take advantage of this freedom as they create stylized motives imitating those woven with complementary-warps (Figure 5). The Taquile weavers work in an opposite manner as they choose double-weaving for the central band of their *calendario* belts in order to obtain fine motifs with much more realistic rendering than those possible with complementary-warps (Figure 6).

Figure 6 – A calendario belt from Taquile with its central band in double-weave. Animals are quite realistic. (Taquile, October 2012)

* *In the case of complementary-warp weaving*, the weaver will work at the picking-cross between the two colors (controlled by the heddles and by the shed-rod) in order to be able to select threads from both series with specific attention to pick only one thread from each of the complementary pairs (Figure 7a). But, as complementary weaves are based on floats and not on independent punctual units like double-weaving uses, the making of the 2-span floats arranged in oblique parallel lines – the system preferred by the Jalq'a – requires specific mathematical counting besides the usual selection of the colors for accuracy of creating the designs.

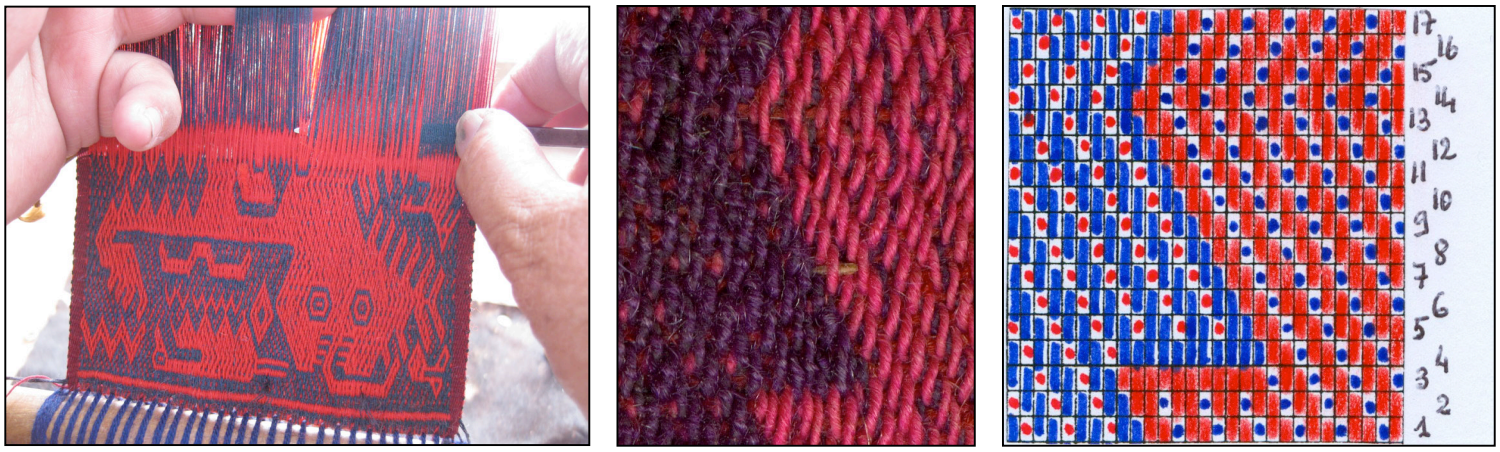

Figure 7. Complementary-warp weaving : selecting the threads (a, left), woven detail (b, center), and draft on appropriate grid (c, right.)

As represented on figure 7bc, counting in the weft direction from right to left, and from bottom to top, the weaver will pick successively:

… (7)
2B 1R 2B 1R 2B 1R 2B 1R 2B 1R 2B 2R 1B 2R 1B 2R 1B 2R 1B = (6)
1R 2B 1R 2B 1R 2B 1R 2B 1R 2B 1R 2B 2R 1B 2R 1B 2R 1B 2R = (5)
1B 1R 2B 1R 2B 1R 11B 2R 1B 2R 1B 2R 1B 1R = (4)
2B 1R 2B 1R 2B 11R 1B 2R 1B 2R 1B 2R 1B = (3)
1R 2B 1R 2B 1R 2B 2R 1B 2R 1B 2R 1B 2R 1B 2R 1B 2R 1B 2R = (2)
1B 1R 2B 1R 2B 1R 2B 2R 1B 2R 1B 2R 1B 2R 1B 2R 1B 2R 1B 1R = (1)

She will follow the pace: 2 Red-1 Black, 2R-1B, 2R-1B …[17]. And when changing color, she will finish on 2R and begin the next series with 2B-1R, 2B-1R, 2B-1R … From one weft to the next, the count begins at a different place: for instance 1R-1B, 2R-1B, 2R-1B… for weft (1), followed by 2R-1B, 2R-1B, 2R-1B… for weft (2) to get the floats in lines building towards the left, in a S direction. Such selection would not be so complicated to achieve if the oblique arrangement of the floats would always stay with the same orientation and the same kind of color change. But this oblique arrangement may be in the Z direction, or interrupted by a horizontal color change, depending on the surface effect and the design desired by the weaver. For instance, on wefts (3) and (4) where a horizontal color change occurs, the weaver interrupts the regular count with 11R, then on the next weft with 11B. This number 11 results from a mathematical formula as well as many other changes of the basic arrangement of the floats. And as Jalq'a textiles are characterized by a face animated by many changes, weaving requires calculation all the time, with one constraint in mind: the warp floats must not pass over more than 3 wefts, or exceptionally 4 wefts, so that the textile does not bear long floats that would introduce a physical weakness as well as being unaesthetic.

The logic of complementary-warp weaving is complex and requires much more abstract capacities from the weaver who needs to synthesize the complementary principle with these mathematical calculations. Structurally, each row is dependent on the previous one. And graphically, the design shape is dependent on the various ways colors can change: along the oblique lines of the floats, either Z or S oriented, and along horizontal lines. The final result is a textile with a surface animated by oblique lines with changing directions and designs that are quite geometrical, with many details reduced to triangles, diamonds, and hexagons, and, in the case of the feathers or hair, to repetitive

[17] According to Arnold and Espejo (2012 : 23), 2/1 is the way weavers distinguish this particular complementary-warp weaving from others based on 1/1, 2/2, 3/3, or 4/4

symmetrical units (Figure 7a). In spite of these difficulties, Jalq'a weavers who have integrated the various problems to solve, such as a musician knowing her music score, advance generally at a reasonable pace during weaving, as there is only one weft to introduce under each selection. (as opposed to the two wefts required for the double weave.)

Jalq'a and Taquile weavers: a common change for opposite reasons.

Comparing now the two warp-faced creative processes used extensively by Jalq'a weavers, it is obvious that both are based on a complementary logic, even if only one type of structure bears a name that reflects this principle. But only the so-called "complementary-warp weaving" needs elaborate counts and this makes this form of weaving conceptually much more complex than double-weaving. Therefore, one can assume that Jalq'a double-woven textiles of medium or low quality have been woven by weavers who did not want to learn or could not master the complexity of the more usual complementary-warp weaving. They prefer to use an easier technique whose flexibility allows them to imitate the stylized designs with geometric shapes obtained with the other former technique.

In the Taquile case, as reported by Elayne Zorn, the shift to double-weave weaving is consciously taken in order to obtain more realistic motives despite the longer time required to weave them: « ... *« new » belts with this structure show an increase in invented, mostly representational, motifs including cows and butterflies* »[18].

Today, in a period of rapid changes in the marketing of traditional textiles, several other examples foster the one or the other behavior as initiated by opposite marketing strategies: to weave sub-quality products that can be attractive to tourists, or to develop a new style fashion trends versus more realistic creations observable today in many other Andean textile productions.

Similar changes occurred in the past, for instance when the style of Paracas embroideries that slowly passed from the geometric linear style designs mathematically based on counted stitches to block-color style motifs free from many former technical constraints of the counted stitches. As shown by Pre-Columbian objects, the production of Andean art has constantly balanced between more stylized and more realistic artistic tendencies. Beginning to understand how this plays out with textiles, an art form that occupied such a central part in the development of Andean artistic creation seems essential. It will help us to understand how Jalq'a weavers, and Taquile weavers so beloved by Elayne, take part into the long history of Andean art.

Trying to understand these details in the weaving process reveals how distorted our own approach to understanding Andean weaving techniques may be, when we rely only on our own conceptual frame, that is to say on the structures or looms complexity, and on the terminology[19]. Complementary-warp weaving is not the only process involving the complementary principle, and complementary-warp weaving is not simpler than double-weaving. It involves a lot of mathematical counting and number combining, which was probably highly appreciated in the past, as it is today. We need a general textiles classification and terminology to exchange ideas with each other, but we need also to question constantly our approach

[18] Zorn 1988 : 75. On the same page, she comments that "*Warp-faced double cloth is more difficult to weave ...",* but it is not clear if this is what Taquilean weavers think or if it reflects what we all think until we experiment it.
[19] For more details, see Balfet and Desrosiers 1987

Acknowledgements

I thank Blenda Femenias and Andrea Heckman for inviting me at the session "Andean Textiles: in Memory of Elayne Zorn", Blenda Femenias again and Elena Phipps for reading the draft and editing the English. In Sucre (Bolivia), I thank Verónica Cereceda for her help, and Claudina Anagua Piris for sharing with me her knowledge of Jalq'a weaving. Photos and designs : © S. Desrosiers.

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