CLASSIC SALISH TWINED ROBES

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THE STUDY OF COAST SALISH weaving began with the remarkable work of Oliver N. Wells, who was born in 1907. He was a farmer and an amateur ethnographer, and was a third generation member of the Wells family, who lived on a farm near Chilliwack in the lower Fraser Valley. Oliver Wells grew up among the Stó:lō, the nearby Coast Salish people, and he was one of the few settler British Columbians who appreciated their Native neighbours and sought to understand and record their ways. His slim self-published booklet, *Salish Weaving Primitive and Modern as Practiced by the Salish Indians of South West British Columbia* (1969) is the point of departure for all subsequent studies of Coast Salish weaving.

Wells divided his study into two chronological categories: primitive and modern. The former comprised all Salish weaving (including blankets, cloaks, straps and belts, aprons, mats, and baskets) before its virtual demise and eventual modern revival (for which he was partly responsible) during his own day. He did not explore the progressive penetration of external influences on the Indigenous weaving tradition beginning shortly after European contact. This was first attempted by Carolyn Marr in a little known master's thesis that she completed in 1979 at the University of Denver.[1] Marr associated what she called "organized blankets" with the new wealth produced in the maritime- and land-based fur trades,[2] and with two-strand twining, or tapestry, weaving – a broad categorization that does not take into account the difference between traditional Salish weaving and its successors, which were influenced by European contact.

The work that extended Wells's research and became the definitive study of Coast Salish weaving is Paula Gustafson's *Salish Weaving*.

[1] Carolyn J. Marr, "A History of Salish Weaving: The Effects of Culture Change on a Textile Tradition" (MA thesis, University of Denver), 76.

[2] A term derived, perhaps, from Mary Lois Kissel, "Organized Salish Blanket Patterns," *American Anthropologist* 31, 1 (1929): 85-88.

Gustafson, a potter and tapestry weaver, never knew Wells personally (he died in 1970), but she spent many hours in the shop of the Salish Weavers Guild, which Wells had helped found, and in the homes of Salish weavers. She also undertook a comprehensive survey of Salish blankets held in museums around the world. On this basis she divided blankets that were all or partially twined (see the following discussion of twining) into three categories: classic, colonial, and hybrid. Classic blankets, made before 1850, were fully twined and reflected little outside influence. Colonial and hybrid blankets ("organized blankets" in Marr's classification), made after 1850 when settler colonialism was advancing rapidly, altered both the aesthetics and structural integrity of classic blankets, produced a visual effect more akin to tapestry weaving, and never used twining to its full potential. Gustafson found three complete classic blankets: the first in the National Museum of Finland; the second in the Perth Museum, Scotland; and the third in the Smithsonian Institute in Washington, DC (she also found one classic fragment in the Smithsonian). She held these in the highest esteem, and the only colour photographs in her book are of these blankets.

I greatly admired Paula Gustafson and worked closely with her for many years. We were different weavers, she interested in tapestry weaving, I in twining, but we often spun and dyed together. When she was asked to give a lecture and workshop on Salish twining at a Pacific Rim textile conference in Mittagong, Australia, she gave the organizers my name and obtained the grant that allowed me to attend. Near the end of her life, she gave me her collection of Salish slides.

Although Paula Gustafson greatly extended our knowledge of Salish weaving, she would never have said that her study was complete. From my perspective, there is more to say about twining, both about the technique and about the relationship between technique and design. And there is more to say about the classic blankets, especially as, in my view, they are the finest weavings produced by a North American Indigenous culture. They speak, moreover, to the subtle inward-looking and transformative quality of Coast Salish art.

Various terminologies have been used to identify these pieces. Paula Gustafson called the weavings she studied "blankets." Oliver Wells distinguished between "blankets" (large and used as bed covers) and "cloaks" (much smaller and worn). All of the historic and contemporary garments in an important recent collection of writing on Coast Salish art,

S'abadeb/The Gifts: Pacific Coast Salish Arts and Artists,[3] are referred to as "robes," an indication of status and rank. I use this latter terminology.

I come to the study of these robes as a weaver familiar with the techniques required to make them. Otherwise, I contend, the robes can neither be properly understood nor the skill that made them appreciated. I also hold that an artefact comes into focus to the extent that the context of its production is understood. As Debora Sparrow (Musqueam) has said: "Salish weaving is really a part of a larger whole that can't be extracted. It you extract it, you take it out of its context, and you lose some of its power and its meaning."[4] Textiles have long been a means of conveying information and meaning, especially in oral societies. They were made by women, yet information about them was usually recorded by men who neither knew the female traditions and myths that gave meaning to these textiles nor the processes of spinning, dyeing, and weaving that made them. Historical observations about Coast Salish weaving are incomplete at best and misinformed at worst.

In this article, I briefly discuss the natural and cultural environment that supported the classic Coast Salish robes. I also say a little about the Coast Salish use of the spindle and the reverse warp method for stringing looms. These ways were unique to the Salish; moreover, they provide a link to Salish understandings of transformation processes. My main emphasis, however, is on the methods of twining incorporated into the classic Coast Salish robes. Previous drawings of flat twining do not include the edges, yet the edges and their turns determine the twining patterns. The edges of the classic robes were obscured by fringes; as a result, the technical basis of these robes has not been appreciated. Some of this discussion is intended for weavers; other readers may wish to turn to the three surviving classic robes themselves. I discuss their cultural place, aesthetic value, and craftsmanship. Much of the discussion deals with tangible physical realities, but the robes have other, less tangible qualities that I treat as best I can.

THE CREATIVE ENVIRONMENT

The production of complex goods like the classic robes becomes possible when there is time left over after subsistence activities, society is sufficiently stable to enable the passing of skills to new generations, and

[3] Barbara Brotherton, ed., *S'abadeb/The Gifts: Pacific Coast Salish Arts and Artists* (Vancouver: Douglas and McIntyre, 2008).

[4] Crisca Bierwert, "Weaving in Beauty, Weaving in Time," in Brotherton, *S'abadeb/The Gifts*, 245.

there are enough people to allow specialization. Moreover, societies must value the product. The Salish people more than met these conditions long before and even after the smallpox epidemic that it is estimated reached them in the early 1780s. Their territory, focused on one of the world's great salmon rivers, in all likelihood had more readily available non-agricultural food than could be found anywhere else in Canada. Food was abundant and readily stored; the population density was high. Living in large communal houses during the winter, the Salish had time to pursue various material productions as well as to sing, dance, and engage in storytelling.

Population density is necessary if a culture is to support artistic specialization. Although many people can carve, spin, or weave, few are gifted. Moreover, it takes a lifetime of practice to become a master craftsperson. Recognizing this, many Indigenous societies supported their best craftspeople by allowing them the time to refine their skills. The high quality of West Coast material production, and particularly of Salish weaving, is tangible evidence of the specialization practised by a few gifted individuals whose communities valued and supported them. The three robes that are the focus of this study were collected in the early nineteenth century, several decades after a smallpox epidemic that may have killed as many as three-quarters of the Salish people.[5] Since these robes took years to make and were precious and cared for, they may have been woven prior to the epidemic. If they were made after, they were certainly woven by master weavers who survived the epidemic and retained the relevant knowledge and skills.

TOOLS: CARVING FOR TRANSFORMATION

While spinning and weaving was practised by women, woodworking and carving was practised by men; hence, spindles, and looms were made by men. All Salish woodworking, whether ceremonial (masks, figures, boards, rattles) or practical (house posts, mortuary boxes, spindles and looms) appears to be related, as anthropologist Wayne Suttles notes, to a transformative process associated with ancient Salish creation myths pertaining to the Transformer.[6] In Salish cosmology, the Transformer gave the first Salish people their spiritual practices; in this light it would

[5] Cole Harris, "Voices of Smallpox around the Strait of Georgia," in *The Resettlement of British Columbia: Essays on Colonialism and Geographical Change*, Cole Harris, 3-30 (Vancouver: UBC Press, 1997).

[6] Wayne Suttles, "Productivity and Its Constraints: A Coast Salish Case," in *Coast Salish Essays*, (Vancouver/Seattle: Talonbooks/University of Washington Press, 1987), 104, 130.

appear that Salish woodworking and carving are themselves embedded in transformation rituals and spiritual practices.

The tools men made to enable women to spin and weave supported the transformative nature of each process. Both spinning and weaving have metaphysical elements. Akin to alchemy, they change something of little value into something precious – straw into gold. For the Salish the carving on spindles and looms was a spiritual necessity. It aided the spinner and weaver's spiritual transformation, and the carver's spiritual energy became part of the weaving's history and power. As Gerald Bruce subiyay Miller and D. Michael CHiXapkaid Pavel put it: "All traditional Salish design share a common characteristic of being a map or guide to the spiritual domain that defies the earthly laws of physics, particularly concepts of time and space. When done properly, the object becomes a vortex that can usher one into the supernatural realm, open a pathway for spiritual entities to enter the corporal realm."[7]

Although tools are usually less valued than are the objects they produce, we have fine examples of Salish spindles and looms in the Royal British Columbia Museum, the Museum of Anthropology at UBC, and the Canadian Museum of History in Ottawa-Hull. Many upright looms have carvings on the top of the sides, above the horizontal bars. One of the oldest tools is a stone spinning whorl, apparently at least seven hundred years old, found in the Miliken archaeological site near Yale, British Columbia, and now in the Museum of Anthropology at UBC.[8] W.F. Tolmie collected a beautiful Coast Salish whorl in 1884, now in the Canadian Museum of History (Figure 1). A seated man with upraised arms is surrounded by motifs of sea otters and birds – exquisite, powerful imagery that supports the transformative nature of the activity for which it was made.

SPINNING

The Salish spun with spindles. A spindle has two parts: a shaft with a tapered top end and a round disk, or whorl, made of stone or wood. The whorl is placed one-fifth to one-quarter of the distance from the bottom of the shaft, and the spun yarn is wound around the shaft above the whorl. Franz Boas describes Salish spindle spinning of stinging nettle as follows:

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[7] Cited in Gerald Bruce subiyay Miller and D. Michael CHiXapkaid Pavel, "Traditional Teachings about Coast Salish Art," in Brotherton, *S'abadeb/The Gifts*, 47.

[8] Paula Gustafson, *Salish Weaving* (Vancouver: Douglas and McIntyre, 1980), 18, 20.

Figure 1. Salish (Cowichan) spindle whorl collected by William Fraser Tolmie in 1884. *Source*: Canadian Museum of History.

> When spinning the woman holds the spindle in her right hand. The end of the nettle string is hung over the edge of the box, and the end is twisted around the spindle shank close to the reel. Then she rubs the spindle down the shin of her right leg, first resting the tip of the shank between thumb and first-finger of her left hand, but holding the thread, as soon as the spindle begins to twirl around, at a distance of about 30 cm (about 12 inches) above the whorl. Thus about 30 cm of fibre are twisted into a thread which is then wound up close to the reel. Then she takes another portion of fibre out of the box, and proceeds in the same manner until a large ball of thread has been wound on the spindle.[9]

[9] Cited in Gustafson, *Salish Weaving*, 73.

Seated spindle spinning of this type could not be combined with other activities. In conventional spindle spinning, the spinner stands or even walks while twisting the top of the shaft with a quick flick. This causes the spindle to rotate, its rotation speed and duration a product of the flick force and the weight and diameter of the whorl. The fibres are "drawn out" from above the spindle top, allowing the spin to run up the length of the unspun fibre. Spinning results from the rotation and centrifugal force of the whorl. Seated Salish spindle spinning, on the other hand, is more specialized and does not rely on the centrifugal force of the rotating whorl. The shaft rotation results from moving the spindle down the leg with the right hand. The fibre lies at a right angle to the spindle shaft, and the spinner allows it to slip or flick off the end of the spindle shaft. When half a rotation of the shaft is completed, the shaft scoops up the yarn to a position on top of the shaft. One twist is completed with each rotation and scooping motion of the spindle shaft. When a length is spun, the spindle is rolled back up the leg, winding the spun fibre around the shaft.

WARPING THE LOOM

The Salish loom was made of two poles fixed in the ground and two horizontal beams. Each pole had two slots large enough to accommodate the horizontal warp beams and wooden wedges. The wedges pushed the horizontal warp beams apart and tightened the warp threads.

The simplest method of warping a loom is to wind the warp around the horizontal beams, with half the threads at the front of the loom and half at the back. Weaving can begin and end at any point and will leave fringes at either end. The Salish, however, practised a very different and technically more advanced method of warping. In this method, known as reverse warping, the warp has a top and a bottom that are folded around the two horizontal loom beams (Figure 2). The top and the bottom of the warp go in a U-turn around a thin warping pole placed at the front of the loom. When the pole is removed, the top and bottom sections of the warp are released. The top warp section can fold up and the bottom warp section can fold down. As with circular warping, the warp distance is twice the distance between the poles.

Reverse warping offers both structural and aesthetic advantages. The beginning of the weaving can be pushed up against the warping pole. When the warp is removed from the loom, the top warp edge, where the weaving began, is a row of short loops that can be chained from

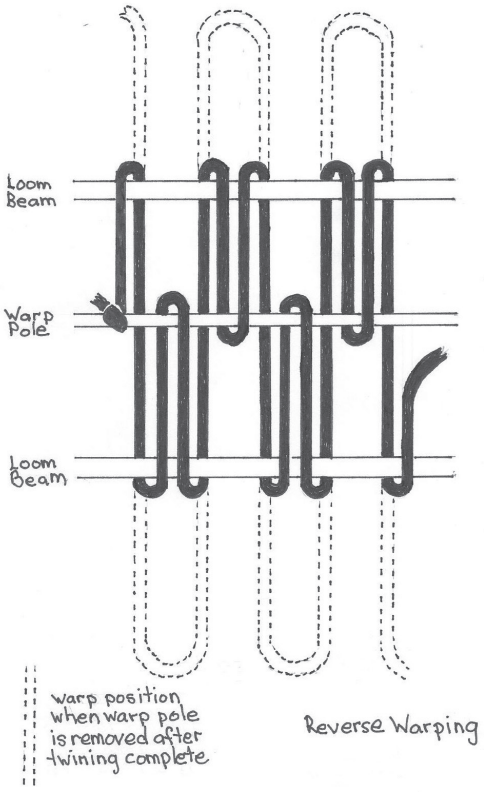

Figure 2. Reverse warping method. Dotted lines show warp position when warp pole is removed and warp is unfolded from loom.

one to the next to give a solid top border. Reverse warping was used for ceremonial robes of the highest technical, aesthetic, and spiritual quality.

Although the few remaining twined robes have a short fringe at the top, this is a result of wear. The last loop in the chain wore away from the weaving, and all the consecutive loops became unchained, leaving a small fringe at the top. Moreover, these cloaks were woven from the top down in the direction they would be worn. The weaving progressed with its intended physical and visual orientation.

This was not the case with the twill and hybrid robes. They have long fringes at both the top and the bottom. When worn, one of the side selvages is placed around the neck and down the front, shifting the orientation ninety degrees from the loom placement while weaving.

TWINING

The early classic robes were produced entirely by twining. Unlike twill weaves, in which a single weft, or cross thread, remains perpendicular to the warp and parallel to subsequent weft threads as it is woven across the loom, twining requires a strong warp covered with pairs of fine weft threads – twiners – worked together. These pairs switch between the front and the back of the weaving as they are twisted between each warp thread. Such twisting requires a strong and fairly rigid warp fibre, qualities more readily found in plant than in animal fibres. (The principal plant fibres available to the Coast Salish were derived from stinging nettles and the inner bark of cedar trees.) Furthermore, twining has a directional grain. The twiners alternate *and* twist between the front and back of each warp thread, causing a diagonal slant for each stitch. The Salish well understood the design possibilities of these diagonals and used them to articulate and empower the patterns in their cloaks.

Twining was originally a basketry technique. So used, always twisting the twiners in the same direction between the warp, the resulting stitch slant remains the same from row to row. This is because the twining progresses around in a circle with the direction of the twining remaining consistent. When the basketry method is used on a flat surface the direction of twining has to switch from one edge to the other and back. The result is a sideways "knit" pattern with the slant direction shifting from row to row. To maintain the same slant as the row above when twining back and forth on a flat surface, the twist has to be reversed. If the previous row is twined with the front thread going *under* the second twiner, the twiner must go *over* the second twiner in the next row. Once this relationship is understood, the weaver can maintain or change the slant for specific designs.

The woven samples (Figures 3 and 5) are a bridge between the cloaks and the technical drawings. They are less compressed than the actual robes so that the warp threads and the directional slants are more apparent. They contain more rows of each section than do the technical drawings (Figures 4 and 6), so that the twining slants and the colour patterns will be more visually evident. The slants are described from the top to the bottom, thus a slant going from the top left to the bottom right is a left slant (\) and a slant going from the top right to the bottom left is a right slant (/).

The ability to switch diagonal directions and/or to use two colours in the same row of twining rests on the turns at the edge of each row. Because the fringes the Salish added to the sides of their cloaks hide

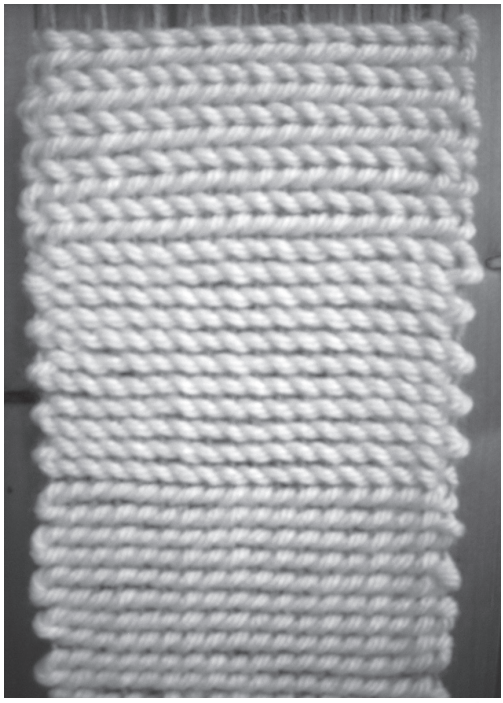

Figure 3. Woven sample of single colour twining. Sample is not compressed so that the warp is evident.

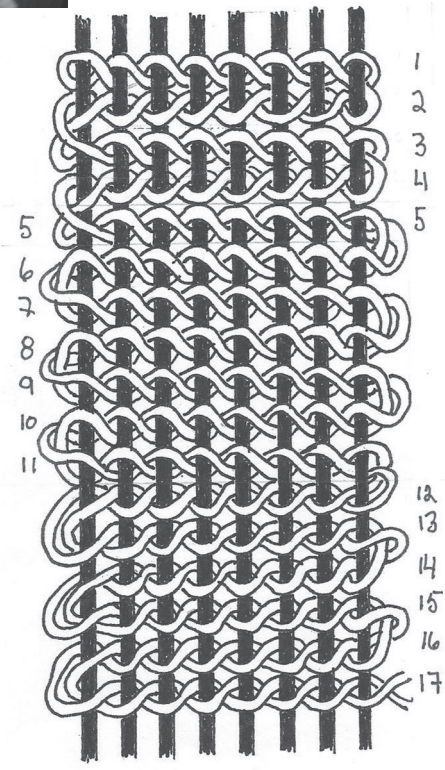

Figure 4. Technical drawing of single colour twining showing the edge turns that result in the various slants.

these turns, their importance has not been sufficiently appreciated. To my knowledge there are no published twining drawings that illustrate these turns. The included photographs of twining samples (Figures 3 and 5), while illustrating the various slants and visual patterns, do not clearly show these turns. The technical diagrams (Figures 4 and 6) give this very important information. When describing the technical drawings the terms "in front of" (or "front") and "behind" (or "back") refer to the position of a twiner in relation to the warp thread. The terms "over" and "under" refer to the positioning of the "front" twiner in relation to the "back" twiner between the warp threads.

The specific row relationships between technical drawing (Figure 4) and the photograph of woven sample (Figure 3) for single-colour twining are as follows. The first section illustrates the basket twining method, which keeps the twists between the warp threads consistent in consecutive rows. When this method is used two-dimensionally, the physical directional slant changes in consecutive rows (Figure 4, rows 1-5 and Figure 3, rows 1-11). The second section illustrates a physical directional left slant (\) (Figure 4, rows 5-11 and Figure 3, rows 11-21). The third section illustrates a physical directional right slant (/) (Figure 4, rows 12-17 and Figure 3, rows 22-32).

The technical drawing of single-colour twining (Figure 4) gives specific descriptions of the twining process and the required turns as described below. *Rows 1 to 5* illustrate the basketry technique of maintaining the direction of the twiner twists between warp threads from row to row and resulting in a knit-like structural pattern. Salish weavers employed only two rows of this method in the cloaks when executing a directional slant change from one row to the next.

The first row is begun by folding the twiner around the first warp thread at the right. This fold results in the twiner becoming two strands without loose ends at the beginning. The fold would divide the twiner so that it was not of equal lengths. This ensured that, when a splice was required for additional length, it would be offset by the other twiner. After the fold, one of the twiners is in front of the warp thread and the other twiner is behind the first warp. The front twiner then goes under the back twiner and behind the next warp thread. The twiner that was behind the first warp thread then comes to the front and under the previous twiner. This progression of the front twiner going under the back twiner and then behind the next warp progresses to the end of the row, resulting in a physical left slant (\). The turn at the end of the row progresses as follows. The front twiner goes under the back twiner,

behind the last warp thread, and around to the front to begin the next row. The back twiner goes around the last warp thread to the front on the next row and then under the previous twiner and behind the next warp. The turn is now complete and the row progresses with the front twiner going under the previous twiner and behind the next warp. The turn on the opposite side is the same as previously described. Rows 1-5 illustrate this technical progression when the twiner twists remains consistent.

Rows 5 to 11 illustrate a consistent left slant (\) in all rows. Row 5 employs a left slant (\). To continue twining that maintains this slant from row to row, the direction the twiner twists between the warp thread has to reverse in each row. Therefore, in row 6 the front twiner must twist over and behind the next warp. The odd-numbered rows twist under and the even-numbered rows twist over, and a twisting shift is established at the turn. At the last warp thread of row 5, the front twiner goes under the back twiner and behind the warp, completing the row. The back twiner goes around the last warp thread and to the front, then over the previous twiner and behind the next warp. The twining row progresses with the front twiner now going over the twiner and behind the next warp until the end of the row. The turn at the end of the row (described above for basketry twining) results in a left slant (\) with an under twist. The front twiner goes over the back twiner (behind the last warp thread) to the front, beginning the next row. The back twiner goes around the last warp thread to the front and then under and behind the next warp. The turn is now complete and the row progresses with the front twiner going under and behind the next warp.

Rows 12 to 17 illustrate a consistent right slant (/) in all rows. Since row 11 is a left slant (\), row 12 must become a right slant (/). The front twiner at the last warp thread must go under the back twiner and around behind the warp, completing the row. The back twiner goes around to the front and then under the previous twiner and behind the next warp. The row progresses with the front twiner going under the back twiner and behind the next warp thread until the end of the row. The twists in rows 11 and 12 are both under, but because the progression of the twining direction has changed the resulting slant is also changed, as with the basketry twining. To maintain the right slant (/) the twist on row 13 must switch from an under to an over twist. The front twiner at the last warp thread goes under and around the warp to the back, completing the row. The back twiner goes under and around the warp and to the front, completing the row. The back twiner goes around the

warp to the front, twists over the twiner, and goes behind the next warp. The odd-numbered rows are over twists and the even-numbered rows are under twists.

The specific row relationships between technical drawing (Figure 6) and a photograph of a woven sample (Figure 5) for two colour twining are as follows. The first section illustrates a physical directional right slant (/) and corresponding visual diagonal right slant stripes. The colour placement alternates consistently both vertically and horizontally (Figure 6, rows 1-4; Figure 5, rows 1-7). The second section illustrates a physical directional right slant (/) and visual vertical stripes of one warp width (Figure 6, rows 4-8; Figure 5, rows 7-13). The colour placement alternates horizontally but remains consistent vertically. The third section illustrates a physical directional left slant (\), with the first row colour selection the same as the previous row, creating a visual point at the shift and then alternating colours both horizontally and vertically, forming a visual diagonal left slant (Figure 6, rows 8-11; Figure 5, rows 13-20). The fourth section illustrates a physical directional right slant (/) and vertical stripes of one warp thread width. The colour placement alternates horizontally but remains consistent vertically. The first row of the physical slant shift uses the same colour placement as the previous row, resulting in a point at the pattern change (Figure 6, rows 11-15; Figure 5, rows 20-26). The final section illustrates a physical directional right slant (/) and corresponding right slant diagonal stripes. The colour placement alternates consistently both vertically and horizontally (Figure 6, rows 15-19; Figure 5, rows 26-33).

Note that when the physical slant remains the same at the transition between vertical stripes and diagonal stripes there is not a point at the shift (transitions between first and second sections and between fourth and final sections). For this reason, Figure 6, row 4 and Figure 5, row 7 are included in both the first and second sections. As well, Figure 6 row 15, and Figure 5, row 26 are included in both the fourth and final sections. The transitions between the second and third sections, and the third and fourth sections, have directional changes but maintain the same colour progressions between the last row of the previous section and the first row of the new section, resulting in a point. Thus Figure 6, row 8 and Figure 5, row 13, as well as Figure 6, row 11 and Figure 5, row 20, are shared between these sections.

Single-colour twining just deals with the physical elements of the various slants and their required turns. Two-colour twining adds more visual requirements to the physical ones previously described. It employs

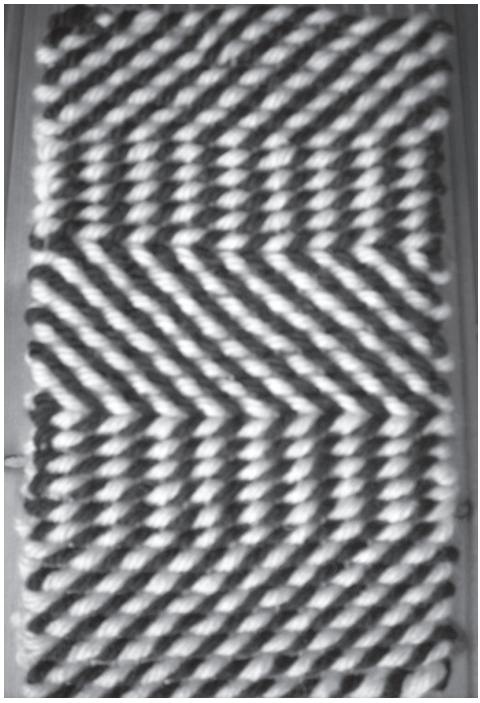

Figure 5. Woven sample of two colour twining. Sample is not compressed so that the warp is evident.

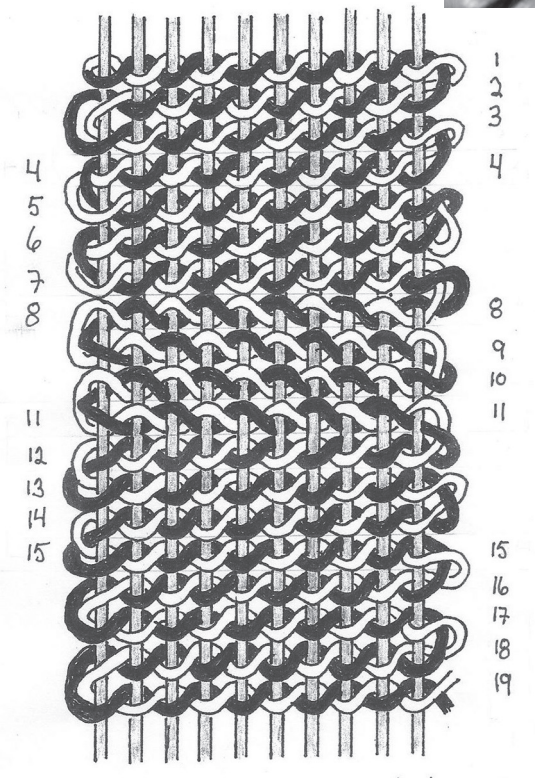

Figure 6. Technical drawing of two colour twining showing the edge turns that result in various slants and patterns.

two colours at the same time in the twining technique. The element of colour will be designated light L and dark D, in addition to previous designations.

The technical drawings for two-colour twining (Figure 5) allow for specific descriptions of the twining process and the required turns as follows. *Rows 1 to 4* all have a right slant (/) and alternating colours both horizontally and vertically. Strands of each colour are spliced together and folded over the first warp with the D twiner in front and the L twiner in back. The D twiner goes over the back L twiner and behind the next warp thread. The row progresses with all twists going over to the end of the row. At the last warp, the L twiner is in front so it goes over the D twiner and behind the warp, ending the first row. The D twiner goes around the warp to the front, under the L twiner and to the back. The row continues with the front twiner going under and behind the next warp. At the last warp the front L twiner goes under the D twiner and to the back of the warp, ending the row. The back D twiner comes to the front of the warp and over the L twiner. The row progresses with the front twiner going over and behind the next warp. The turn is the same as the turn between rows 1 and 2 and progresses with an under twist and a physical right slant (/).

Rows 4 to 7 all have a right slant (/) and alternating colours only horizontally. The colour usage vertically remains consistent from row to row resulting in vertical stripes. Row 4 is the last row of the first section and the first row of the second section, and it sets the vertical colour designation. The colour placement at the end of row 4 has the L twiner at the front position and the D twiner at the back position. These colour positions must be maintained in the next row 5, while maintaining the right slant (/). The back D twiner goes over the front L twiner and returns to the back position for the next row. The front L twiner goes to the front position in row 5 and is "held in place" by the loop formed by the back D twiner. The turn is now complete with the required colour placement. The row continues with the front twiner going over and behind the next warp, resulting in the required right slant (/). The end of row 5 has the D twiner in the front position and the L twiner in the back position. These colour positions must be maintained in the next row 6, while maintaining the right slant (/) with all twists going under. The back L twiner goes over the front D twiner and returns to the back position for the next row. The front D twiner goes to the front position and is "held in place" by the loop formed by the back L twiner. The turn is now complete with the required right slant (/). The turn between row

6 and row 7 is the same as between row 4 and row 5. Row 7 continues with all the twists being over. The turns between rows 7 and 8 are the same as those between rows 5 and 6.

Rows 8–11 all have a left slant (\) and alternating colours both horizontally and vertically. Row 8 is shared visually between the second and third section as they have the same colour placement. However, there is a directional slant change at row 8, from a right slant (/) to a left slant (\). Therefore, after the turn between rows 7 and 8, the twist remains the same as for the previous row – that of going over. The result is a visual point because of the directional change of the twining slants, even though the colour placement vertically is the same (see Figure 5 for a clear representation of this resulting visual point). At the end of row 8 the L twiner is in front and the D twiner is in back. Because this section has alternating colour positions both vertically and horizontally, in the next row the twiners must switch colour positions. The L twiner goes over the D twiner and to the back, and the D twiner comes around to the front. The turn is now complete. The row progresses with the front twiner going under and behind the next warp to maintain the left slant (\). At the end of row 9 the L twiner is in front and the D twiner is in back. The L twiner goes under the D twiner and to the back; the D twiner comes around to the front. The turn is complete. The rows progress with all the twists going over to maintain the left slant (\). The turn between rows 10 and 11 is the same as that between rows 8 and 9.

Rows 11 to 15 all have a right slant (/) and alternating colours horizontally while remaining consistent vertically. Row 11 is shared visually between the third and fourth section as they share the same vertical colour placement, while there is a change of the twisting slant from left slant (\) to right slant (/) (see Figure 5 for a clear representation of the resulting visual point). At the end of row 11, the L twiner is in front and the D twiner is in back. The L twiner goes under the D twiner and remains in front. The D twiner goes around the L twiner and remains in back and is "held in place" by the loop formed by the L twiner. The turn is now complete. Row 12 progresses with the front twiner going under and behind the next warp resulting in a right slant (/). The turns between rows 12 and 13 as well as between rows 14 and 15 are physically the same as the turns between rows 4 and 5, except that the colour placement is reversed. The D twiner is in front and the L twiner is in back. This switch in colour placement visually offsets the second section vertical stripes from the fourth section of vertical stripes, with the L twiner in

front of the odd-numbered warp threads and the D in back. The twists alternate from row to row to maintain the right slant (/).

With regard to rows 15 to 19, this section is the same as the first section except that it flows out of vertical stripes instead of into them (as in rows 1 to 4). All rows have a right slant (/) with alternating colours both horizontally and vertically, resulting in a visual diagonal striping with a corresponding right slant (/). The turns between rows 15 and 16, as well as between rows 17 and 18, are the same both physically and in colour placement as is the turn between rows 1 and 2. The turns between rows 16 and 17, as well as between rows 18 and 19, are the same both physically and in colour placement as is the turn between rows 2 and 3.

Classic Salish robes demonstrate the use of directionality to highlight or enliven their imagery. When a zigzag image was woven, the twining directionality would change to correspond to the directionality of the image. In one instance the directionality of the zigzag was further highlighted by employing two-colour twining, a combining of techniques that required the highest mastery. It should be noted that, when these images were viewed at an angle, the visual width of the two-directional twinings would change because of the optical illusion caused by their grain. This visual shift would make the image seem to move when the viewing angle switched with the cloak's movement. Salish weavers outlined many shapes in contrasting colours to heighten the shape's colour – a sophisticated approach, relying on the relational character of colour, to a somewhat limited colour palette. Another method of highlighting was to slant the outline opposite to the slant of the shape. The classic fully twined robes used lustrous, light-reflective fibres that heighten the grain or directionality of the weaving. Since these robes were made to be worn, it can be imagined how the various twined directionalities came to life when they moved.

THE CLASSIC ROBES

My initial curiosity about Salish weaving turned into a passion when Paula Gustafson introduced me to the three classic Salish robes unearthed by her international searches. Although obviously the material manifestations of a highly sophisticated culture, they have been in museums outside Canada for at least 170 years. Even yet, few British Columbians are aware of them.

There are problems when viewing these robes in museums or in photographs because, rendered flat and immobile, they are not in the context

for which they were designed. They were intended to be in motion on human bodies. It is important to be able to place them so in our mind's eye. Remember that the centre top of the robe was around the neck and that the top sides came down the front of the wearer. The bottom corners of the robes, the points closest to the ground, fell a bit behind the wearer's arms. The centre of the robe would be flattish across the shoulders and increasingly folded or draped towards the bottom. Fringes were added to the sides of the robe to match the bottom and, together with shifts in twining direction and colour, increased the articulation of the wearer's movement.

All three classic robes used the potential of both the reverse warping method and two-colour twining bands to the fullest. These robes were woven with the intention that the top be placed around the neck. The top edge has small loops chained to achieve a solid edge. They were woven with a wider width than length, thereby increasing the visual dynamics of the twining slants in the horizontal bands when viewing angles changed with movement. To achieve the same visual movement with twined bands in a vertical orientation the robe would have to move above and below the viewer to activate the slants in the same way. Horizontal band orientation is essential to the visual movement and evocative force of these robes.

These robes were probably the most valuable items of Salish material culture. Because it took many highly skilled carvers, spinners, dyers, and weavers years to make a single cloak, they were rare. Robes were made to be evocative and transformative. The owner of a robe gained status as well as social and spiritual power.

Rapid population decrease and European cultural introductions ended the production of such robes. Two early Canadian attempts to revive Salish twining have not come close to producing twined robes of their former quality.[10] A contemporary American revival has been more successful. Susan Pavel's robe (2007), fully twined and woven in mountain goat wool, is the first of its kind for one hundred years. According to the weaver: "This robe is more than just a garment; it is a feminine entity that comes forth to bring a message of hope and inspiration to all through her teachings."[11]

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[10] Oliver Wells, *Salish Weaving Primitive and Modern as Practiced by the Salish Indians of South West British Columbia*, self published, 1969, 34-35; Elizabeth L. Johnson and Kathryn Bernick, *Hands of Our Ancestors: The Revival of Salish Weaving at Musqueam* (Vancouver: UBC Museum of Anthropology Note 10, 1989).

[11] Cited in Gerald Bruce subiyay Miller and D. Michael CHiXapkaid Pavel, "Traditional Teachings about Coast Salish Art," in Brotherton, *S'abadeb/The Gifts*, 37.

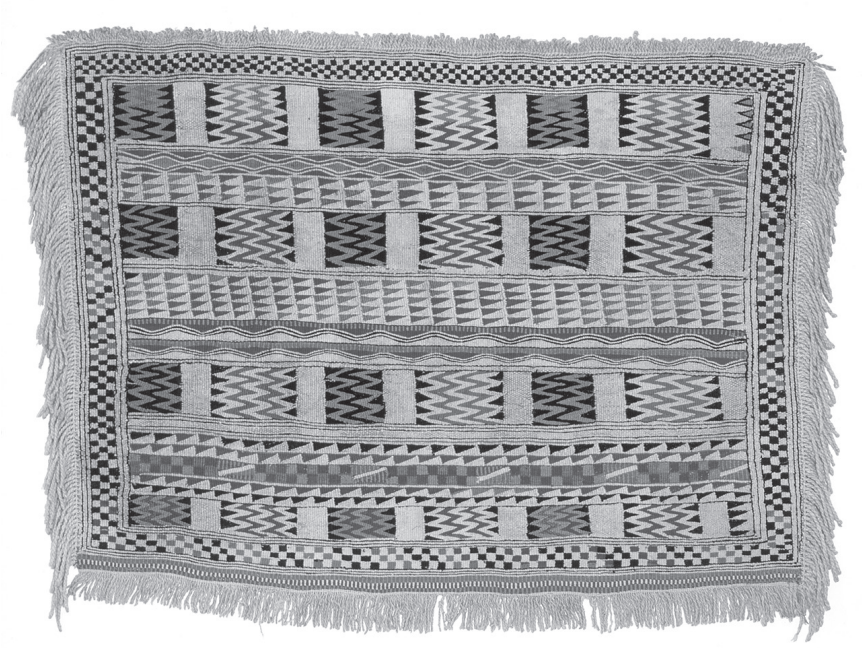

Figure 7. Classic Salish twined robe collected by Anders Gustaf Grenqvist in 1828. *Source*: National Museum of Finland.

There are only three fully twined and dyed classic robes, and one remnant, left. We will never know who wove them. Yet it is important to remember that these amazing robes were the product not just of a weaver but also of a whole cultural community, and they could not be made when that community was diminished and transformed.

Salish art is subtle, evocative, and idiosyncratic, and I am not in a position to discuss its meaning.[12] However, I can comment on the more tangible arrangement of colour and pattern in the classic Salish robes, especially when they were worn and viewed in motion.

Figures 7, 8, and 9 (to which I refer throughout the following discussion) show the three classic robes now in existence. The robe in Figure 7 was given to the Helsinki University of Finland by Anders Gustaf Grenqvist in 1828 and is now in the National Museum of Finland. It is speculated that it was given to Grenqvist by a member of a Russian expedition to the Northwest Coast in the late eighteenth century. It remains in excellent condition. The colours used are black, brown, gold, orange, red, blue, blue-grey, and natural.

[12] Crisca Bierwert, *Brushed by Cedar, Living by the River: Coast Salish Figures of Power* (Tucson: University of Arizona Press, 1999), 103, 169.

There is a small fringe on the top edge and longer fringes at the sides and bottom. The border has a series of single black twining lines alternating with wider natural lines acting as background. Horizontal single twining lines at the robe's top and bottom are balanced on the sides with two-colour twining, the colour changes lining up vertically with the horizontal lines at the top and bottom. The balance achieved between the horizontal twining progression and the vertical two-colour twining required very sophisticated weaving.

The border then progresses to a checkerboard pattern that is several warp threads in width (and balancing twining rows in depth). This checkerboard sharply contrasts black and white at the top and part way down the sides to the point at which several warm colours are introduced. The high-contrast black-and-white checkerboard was worn around the neck and down the front. The introduction of the warm colours into this border activates the lower area of the robe partially obscured by draping folds. The checkerboard pattern is then defined by a second set of single-twining rows, balanced at the interior sides with two-colour twining, and visually balancing the outside linear borders.

The interior of the robe has several reoccurring motifs: four major bands of zigzags alternating with solid, white, rectangular areas; two bands of outlined curvilinear shapes; four bands comprising a series of right-angled triangles; and one band of low contrast checkerboard. The solid white vertical rectangles twined between the zigzag blocks line up visually from band to band. This creates an illusion of vertical white rectangles interweaving with predominantely horizontal bands of triangles and curvilinear forms. This visual interweaving pushes the low-colour-contrast horizontal bands in front of the visual plane of the white rectangles and their high-contrast zigzags – a very sophisticated design that contravenes the normal tendency for areas of high contrast to override areas of low contrast.

The zigzag areas in the four major bands alternate in colour between blocks of black and gold, and blocks of red/orange and white. When red/orange and white are used, the vertical side triangles bordering it are twined in black. These black triangles help draw the eye across the white rectangles to the black and gold zigzag blocks. It should be noted that the zigzag areas change in directional twining whenever the motif changes direction. This directional change adds a grain to the zigzags, thus subtly activating them when the cloak is worn and viewed from varying angles.

The bands containing right-angle triangles are also sophisticated and technically advanced. On first viewing, the vertical lines made by lining up the right side of the right triangles seem perpendicular to the twining line. But on closer inspection these vertical edges are slightly offset. This subtle slant contrasts with the visual directionality, right to left, imparted by the colour changes of the triangle groupings. Across the top two bands, the triangles are grouped in areas of blue-grey and areas of red; their colour contrast is relatively low because black is not used. The bottom two narrower bands of triangles substitute black for blue, thereby increasing the contrast in the lower parts of the robe, which are somewhat obscured by the folds and movement.

There are two bands of curvilinear shapes. The top band is bordered by half shapes in red with a centre of blue-grey oval shapes. These undulating shapes are articulated by outlines of white on either side and by a centre red line. This colouration reproduces that of the first triangle band, although on the whole it seems to be darker because there is less white. The second band of curvilinear shapes has no central area and is made up, rather, of two bands of waves. The top of these waves is red-orange and gold two-colour twining with the colour placement vertically below for each row, giving half tones that are half red-orange and half gold. Below this subtle colour variation, the shape is then twined in solid red-orange to merge visually with the two-colour stripe above. Below this red-orange shape is a striped border of white and black, followed by a white shape that mirrors the red-orange shape above. This progression of shapes and colours in the first band is repeated in the second, although this lower band has far more visual movement than does that at the top of the robe. The increased visual movement of the lower band complements the physical movement of the lower part of the robe. Directional twining shifts in both of these curvilinear bands further articulate the shapes and their visual movement.

This robe is 151 centimetres (fifty-nine inches) wide and 113 centimetres (forty-four inches) long.[13] The warp count is between twenty-one and twenty-three warp threads per ten centimetres (four inches). Warp threads are doubled, meaning that two parallel strands are used as one. This allows the blanket to have strength *and* flexibility as the thickness of the cloak's warp is diminished by half. The use of doubled warp threads also reduces the twining angles, making them less evident to the viewer who would "feel" the movement of the images caused by the

[13] Gustafson, *Salish Weaving*, 123.

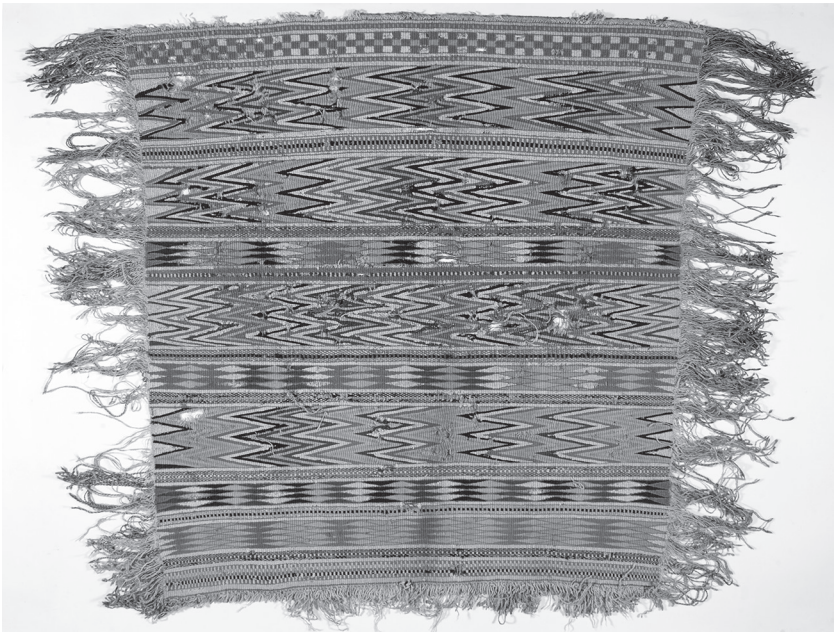

Figure 8. Classic Salish twined robe collected by Colin Robertson and given to the Perth Museum and Art Gallery in 1833. *Source*: Perth Museum and Art Gallery.

physical manipulation of the twining slats but would not be cognitively aware of their cause, supporting the evocative nature of the robe.

The second robe (Figure 8), in the Perth Museum and Art Gallery of Scotland, was collected by Colin Robertson, Hudson's Bay Company trader, and donated to the museum in 1833. A 1924 publication about Maori mantles (cloaks) refers to it and locates its place of origin as "Fraser River, Georgia, N.W. America."[14] Assuming that "Georgia" refers to the Strait of Georgia, this identification is plausible. The robe's colours are green, blue-black, yellow, red-brown, and natural. It is not in as good condition as is the first robe; however, without a border or high contrasting design areas, it is more subtle. As a weaver, I consider that the Perth robe uses the various twining techniques to their fullest potential.

It is composed of twenty horizontal patterned bands. The top large band is a checkerboard, four bands use the zigzag, four bands have interlocking diamonds, and the remaining smaller bands are stripes using various two-colour twining techniques. Between all these bands

[14] Ling Roth, *The Maori Mantle* (Halifax, UK: Bankfield Museum, limited edition, 1924). Quote from reprint (Ilkley, UK: The Scholar Press, 1970), 116 and pl. 22.

are thin stripes twined in a tawny colour. The tawny stripes become a common visual background that allows all the patterned bands to come forward.

The top checkerboard pattern has two smaller bands using two-colour twining of red-brown and yellow with natural stripes above and below. The checkerboard pattern in the centre between them is made up of only three vertical blocks. The top and bottom checkerboard blocks are twined in red-brown and natural. The centre checkerboard area is twined in red-brown and yellow. The visual effect is of red-brown crosses with yellow centres. When worn, the top checkerboard area was around the neck and down the front.

The four zigzag bands use all the colours but with different rhythms and contrasts. As in the previous robe, the twining slant changes to correspond to the visual directional changes in the zigzag, thereby creating a grain that evokes movement. But, unlike the previous robe, the zigzags do not set up a visual pattern or repeat vertically from one band to the next. The only unifying element between these bands is the natural colour triangle at both edges. The second and third bands contain the most blue-black and natural, thus increasing their contrast. They also have more zigzags, visually compressing their high-contrast energy. The first and fourth zigzag bands contain more green and yellow used side by side, making these motifs unite visually and read as a wider band. The layout of zigzag width and colour, as well as the vertical relationship between bands, is far less mathematical than is the case in the previous robe. This design approach – more organic and less mathematically balanced or predetermined – enlivens this robe's zigzags.

The interlocking diamond (arrowhead) bands are softened by an outline of continuous red-brown twining rows. The consistent use of red-brown to outline the interlocking diamonds serves aesthetic as well as structural purposes. Outlining each diamond in a warm colour heightens each image and unifies all the bands with their different colour progressions. As well, this single row of twining across the pattern area unites all the smaller units and brings the varying twining tensions of the smaller units back to an even tension across the full width of the robe. The top two bands employ all the colours but in different relationships. The third band is predominantely high contrast, with the red-brown used only on the outside partial image. The bottom, low-contrast band eliminates the use of the blue-black completely.

The various two-colour twining bands, each varying in depth and pattern, are outlined by a single-colour twining row. Some employ only

patterns with colours directly below one another, others use diagonal striping that shifts directions, and yet others combine these arrangements with a centre area lined up vertically with two-colour twining and bordered by diagonal twining in opposite directions. More than anything else, these smaller bands speak to the weaver's complete mastery of twining's design possibilities.

This robe is 127 centimetres (fifty-three inches) wide and 150 centimetres (fifty-nine inches) long.[15] Woven with approximately the same fineness as the Finnish robe, it is far less dramatic. Yet, on close inspection, it is a jewel that demonstrates a complete mastery of twining techniques and their aesthetic possibilities. The subtle colours are deceiving as, given the condition of the robe, it is more than likely that the original colours have faded.

The third robe (Figure 9) is in the Smithsonian Institution. It was collected by the American admiral Charles Wilkes, probably in Puget Sound in 1841. This robe is twined using black, dark brown, red, yellow, blue, and natural colours. Its design is distinctive: horizontal bands on the top one-fifth and bottom two-fifths, a central two-fifths with vertical patterns on each side with a large centre consisting of a natural rectangle with three groups of bold stripes. There are fourteen major horizontal pattern bands comprising five diagonal bands all slanting in the same direction, seven curvilinear bands, and two large zigzag bands. These major bands are separated by smaller bands of solid stripes with centres of two-coloured twining, with the colours directly below one another, resulting in vertical stripes one warp wide.

The diagonal bands all slant in the same direction, from bottom right to top left, and are twined with the same slant in the twining twists. The top slanted band, worn around the neck and down the front, uses alternating colours of natural and red. The next two slanted bands bordering the central two-fifths of the robe use white and red, with yellow added next to the red – a colour progression that imparts a visual dimension to the slants as the red acts as a shadow of the yellow. The bottom two slanted bands increase the contrast and colour range at the bottom of the robe. The first of these bands, separated from each other by natural white, introduces indigo blue, bordered by red on either side. The introduction of the cool blue colour adds interest and weight to the bottom of the blanket. The final band of stripes, in contrast to the band above, has diagonals of black, yellow, black with white in between. At times brown is substituted for black.

[15] Gustafson, *Salish Weaving*, 124.

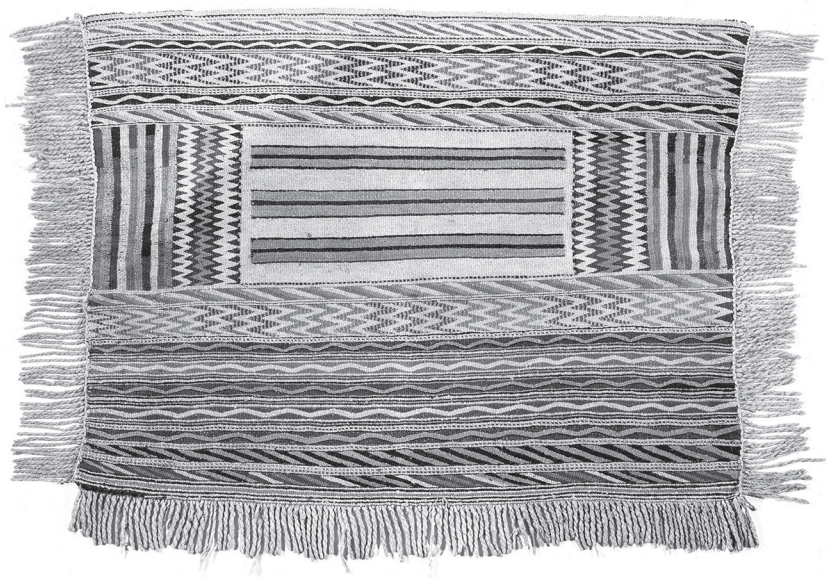

Figure 9. Classic Salish twined robe collected by Admiral Charles Wilkes in 1841. *Source*: Smithsonian Institution.

Seven curvilinear bands have a central shape that undulates through the band and that is not lined up or registered vertically from one band to the next – an organic rather than a mathematical organization that heightens the movement of these forms. Contrast is greatest in the top two bands, with black on the top and bottom and white snaking through them. When worn, this more active area was around the neck and down the front. The colours of the remaining bands are (from top down): orange on the top and bottom with white in the middle, brown on the top and bottom with yellow in the middle, red on the top and bottom with white in the middle, and brown on the top and bottom with yellow in the middle.

In the two zigzag bands every other zigzag is white, used to offset the coloured zigzags, which employ a two-colour twining with the colours lined up vertically. The coloured patterns are in groups of three in a row using the same colours. Two combinations are used: orange with red and yellow with black. All the zigzags employ twining directional changes. The use of two-colour, vertical-stripe twining and a slant shift corresponding to the directionality of the images leaves no doubt that they represent snakes.

The central two-fifths of this robe – vertical stripes on the outside edge bordered towards the interior with zigzag patterns – is a real departure

from the other robes. Vertical colour changes present weavers with technical challenges because they can produce vertical slits that weaken a robe's structural integrity. The weaver of this robe solved the problem by using a shared warp thread and by alternating the turns of adjacent colours. The vertical zigzags do not present this problem as the forms step over successive warp threads with each row. In the centre natural area the horizontal black/brown and yellow stripes do not reach the vertical zigzag borders. These stripes would be on the wearer's back and, totally surrounded by natural colour, would seem to float on the surface.

The colour sense in this robe suggests some cultural borrowing from peoples to the south. The striped patterns in its central two-fifths are used in weft-faced blankets made by many Indigenous peoples in the American southwest.

This robe is 157.6 centimetres (sixty-two inches) wide and 127 centimetres (fifty inches) long[16] – slightly different proportions than the other robes. Its top is a firm, in tacked, chained edge.

The only other surviving example of classic Salish weaving, the fragment of a twined robe in the Smithsonian Institution, was collected around 1804 by the Lewis and Clark expedition and fire-damaged before its donation to the Smithsonian in 1897. It is as finely woven as the others and employs many of the twining techniques, but I do not discuss it because so much of it is missing.

FINAL THOUGHTS

I am humbled by the quality of these robes and by the work and talent required to make them. Twining, which requires a twist between each warp thread, is a much slower process than is regular weaving, in which the single weft thread snakes over and under chosen warp threads. The approximate number of twists in the cloak in Finland can be calculated by multiplying the number of twining rows by the number of warp threads. By this calculation, there are some 71,500 individual twists in this one robe. When one considers this number, converts it to more than a thousand hours required to complete all those twists, and then adds the seasons required to collect, spin and dye fibers, and to carve spindles and looms, the completion of just one cloak becomes a mind-boggling achievement.

So much has converged in these cloaks: mastery of all the techniques involved in their production, the use of materials and techniques to their

[16] Ibid., 125.

best outcome, the integration of aesthetics with technical mastery and function. One senses other, less tangible qualities: intent at every step of production, the integration of the creative process with its cultural and natural surrounding, the imbuing of a woven surface with power, the embracing of a transformative journey. For their makers, these robes acquired a life force, and for all the years and the cultural differences that separate me from them, and for all the stasis of museum displays, I feel it yet. When I asked an elder about her understanding of ancient artefacts, she said that they are "what the ancestors left behind for us to think about and learn from."[17] It is time for these robes to be celebrated and to take their rightful place as the most outstanding woven pieces produced by an Indigenous North American culture.[18]

[17] Barbara Brotherton, "Introduction," in Brotherton, *S'abadeb/The Gifts*, 3.

[18] My thanks to Cole Harris, who encouraged me to write this article and commented on its several drafts.