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## Sails: The Textiles of Empowerment

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### **Sails: The Textiles of Empowerment**

Bettina Matzkuhn

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When I began a personal project in 2010 I undertook research about the construction and history of sails: the forms that they take, the knowledge they embody, the symbols and decoration they carry.

One of my earliest memories is from when my Father took me along on a trip to the Miller Sails loft in Vancouver, around 1960. The light poured in through tall windows. Strips of fabric were laid out on an enormous hardwood floor. It had a few openings in it where women sat at sewing machines that were level with the rest of the floor, so that as they sewed the long strips together, the weight was supported. Bolts of cloth were stacked on shelves at the side. At the window sat a man wearing a sailmaker's palm (a kind of thimble on the ball of your thumb), sewing hanks onto the luff of a sail with heavy waxed thread. I was captivated.

Another significant memory was of sailing our little boat with a motley group of others out from our moorings in Vancouver to meet the Japanese windjammer training ship Kaiwo Maru. It was a gloomy day and we were disappointed to see the bare masts approaching as the vessel powered towards us. But, as she got closer we could make out the cadets, little black ants in the rigging, and suddenly, like a flower unfolding, the sails blossomed. A flower that crossed oceans.

In the 1960s, my parents' small boat had sails that were made of Egyptian cotton. My favorite was the red and white striped jib that identified our boat from many miles away. The cloth was densely woven, satiny to the touch and folded beautifully when the sails were taken down for the day. Years later, on their larger boat, the sails were made of the synthetic Dacron. It was more weather resistant, but was as stiff as plywood.

In 2010 I was awarded a BC Arts Council Grant to learn the rudiments of sailmaking and design what I had in mind: four sets of 12' (3.5m) tall sails to install in a gallery setting. Rob Rose, of Rose Sailmakers walked me through the basics. A sail is NOT a flat triangle, but much like an airplane wing standing on end. For centuries, sails had been cut with the seams parallel to the leech (the outer edge of the sail), but this resulted in excessive stretch and bagginess. Around 1910 some were made with the seams at right angles to the leech and this technique kept sails tight. The seams are tapered at the luff (edge near the mast) and the leech to form a curve or "the belly". The use of Egyptian cotton over European flax also contributed to an improved stability of form. The trophy won from the British in 1851 by the schooner America, which is now known as the America's Cup, was partly due to her snug and shapely cotton sails. (I understand that there are extensive political issues around the production of cotton that will not be part of my discussion.) Today, racing sails prize rigidity and lightness. They are made of mylar and laminated synthetic fabrics that are glued rather than sewn together. I used canvas for my work—as a nod to traditional materials and for the ease of handling.

I made drawings and Rob helped me calculate how much and where to taper the seams. I made a series of maquettes that were set up in cardboard boxes. The full size sails were laid out on my apartment

floor, and seams were sewn with a double-zigzagged machine stitch. Once all the strips were assembled, I re-pinned the outline onto the sail, cut the tablings (like the facings on a dress) and reinforced the head and the clew (outer corner).

Making this simple sail gave me a whole new appreciation for the skill and size of operation involved in some of history's grand sailing projects. Sails such as the ones hoisted by the racing schooner "Westward" –with a mainmast 96 feet high– must have required an enormous working space, expert design and a crew of highly skilled workers, not to mention the sheer amount of cloth. In order to photograph the prototypes I had made, I set them up in a local park, the top of the mast tied to a tree branch.

Tying them to a gallery ceiling would add an unwanted distraction in a gallery space so I asked two sculptors to help me design ways of rigging them in a gallery space. The slightly tilted mast is attached to, and counterbalanced by, heavy steel "feet." A woodworker made me curved battens that slip into the sails' seams to give the illusion they are full of wind. Metal workers shaped the "feet" and welded the mast with a set in sleeve so I could take it apart (and get it up and down my apartment elevator). Throughout this process, I also made drawings and samples to explore what sort of imagery I could embroider onto the sails. They are a blank canvas, pun intended. As they are 3-dimensional, I had to make sure the imagery worked from either side. I used a satin or a running stitch. Over 18 months, I made four finished sets of sails.

*Tides* describes how, around the islands and inlets around Vancouver where I spent my childhood, tidal currents have their own patterns and dangers. In looking at the *Tide Current Atlas*, the fat arrows indicate an intense current, something that will sweep away a small ship or even influence the course of a large one. Where the tide runs fast in the flood may not be where it gushes during the ebb. Armed with the tide tables (date, hour, location), some local knowledge and keen observation the sailor must make decisions that ensure the safety of ship and crew.



**Figure 1. *Tides* 12' (3.5m) high x variable. Machine sewn cotton canvas, hand embroidery, stainless steel tubing, assorted marine fittings, sisal rope. Collection of the artist. Photo: Ted Clarke.**

*Oceans* evokes how every mariner belongs to the greater community. The pilot chart that I referred to for these sails, is a document to which many have contributed. Mariners have kept and shared records for centuries, but currently the U.S. National Geospatial-Intelligence Agency compiles the information. Ocean currents are green, barometric pressure red, and the strange “flowers” in bright blue indicate the winds. The short tails are winds that occur seldom, the long tails are the prevailing winds. The arrows on the end indicate the wind’s force.



**Figure 2. *Oceans* 12’ (3.5m) high x variable. Machine sewn cotton canvas, hand embroidery, stainless steel tubing, assorted marine fittings, sisal rope. Collection of the artist. Photo: Ted Clarke.**

Even in inland waters, the marine weather report tells mariners the strength of the wind, the general weather, the condition of the ocean’s surface and about hazards such as a large, partially submerged log. This specific, detailed information is contributed by mariners who are under way.

My Father’s boat had an engine, but the significant moment came when we had powered out of the anchorage, hoisted the sails and cut the motor. There was only the sound of the water hissing by the hull. With this graceful, silent movement, we were part of a history that spans millennia. Sails share the fate of many historical textiles in that they are not durable, but they exist in legend and art. Christer Westerdal recounts how The Norse god Freyr had a mythical ship, which was always blessed with fair winds. Once ashore, it could be folded up and put into a purse”<sup>1</sup>; this echos how sails can expand to enormous shapes, yet can be folded into small sailbags.

Björn Landström, in his book, *Sails of the Pharaohs*, dates sailing on the Nile back to 4000 BCE. Early small boats would have had paddles or oars, but a sail with a smart stern wind could deliver the boat and its contents more quickly and efficiently. Later, the great galleons with tiers of oarsmen found that sails could take over, leaving more space in the hold for cargo and weapons. Sails enabled trade and

<sup>1</sup> Christer Westerdal - Society and Sail - [http://www.abc.se/~pa/publ/soc\\_sail.htm](http://www.abc.se/~pa/publ/soc_sail.htm)



adventure and the mixed blessings that come with that: fierce competition, colonialism, piracy, conquest, indeed the beginnings of globalization.

Currently relegated to romantic training ships, well-to-do island hoppers and pure sport, sails could make a high tech and computerized comeback in the commercial world. The UT Wind Challenger project boasts fuel savings of up to 30% on oceangoing freighters with its telescoping lightweight aluminum and fibre-reinforced plastic sails.<sup>2</sup> A sailboat can never go directly into the wind, but must approach it at an angle to make “tacks”. If you are beside a “lee shore”, where the wind is blowing you onto it, the ability to sail upwind, or make the angle of tacking close to the wind is very important. If your boat goes to windward “like a sack of potatoes” things may not turn out so well. I often think that, ecologically speaking, humanity is being blown onto a lee shore. Sails may well help us tack away from it.

Sails clothe the ships that hoisted them. “I like the cut of your jib” an old salt might say, implying an acknowledgement of your nationality, your style. He might refer to a Chinese Junk rig, or the Brazilian Jungada (which has remained relatively the same for 400 years), or Filipino Vintas (only used on calm days) which have sails of exuberant patchwork, or the sexy, high-cut Yankee jibs sported by the Grand Banks fishing schooners including Canada’s own Bluenose that barrels across our dimes. As with clothing, the cut itself speaks of identity, but sometimes the sails were decorated. An old stone carving shows the sail sporting reinforcing from ropes, but also the wolf nursing Castor and Pollux. Whether this was really on the sail, or only the artist’s invention, is lost to time. A ship such as the Wasa, built for the Swedish King in 1648, so lavishly decorated on the hull, surely would have some form of decoration on its sails? She foundered and sank after only a mile into her maiden voyage. The hull has been preserved, but not the sails.

In period artworks, the old sailing ships often have identifying decoration on the sails. The Portugese feature the Order of Christ Cross. Vasco da Gama’s fleet of six sported the cross on their sails. Five of them sank. A modern day replica of these caravels, the Boa Esperanza, features the cross as does the Portugese training ship, Sagres II.

To mark the class of a racing sailboat, there are very specific logos placed in the top third of the mainsail. In racing events, for example, in the Olympics, the sails of identical boats will feature numbers or their nation’s flags. But sometimes, the decoration in the sails is more than simple identification. Thames barges ferried all sorts of cargo: “As late as 1903 a Joint Select Committee of Lords and Commons estimated that 75% to 80% of the whole traffic of London was carried by barges.”<sup>3</sup> A chap running his Thames barge from one bank of the famous river to another, was presumably paid to sew the name of a local brickworks onto his sails to become a floating billboard. So began what is now quite common, racing boats with their sponsor’s logos printed digitally onto the sails. Perhaps what I am advertising on my sails is an homage to keen observation, shared knowledge, community, and thrift. I want to celebrate the understanding that comes from living within a natural system –this extends well beyond the lives of sailors.

In our gadget-rich world, sailors still need to understand the particulars of the geography where they find themselves. Captain Steven Best described to me, how, with all the best electronics in the world, a

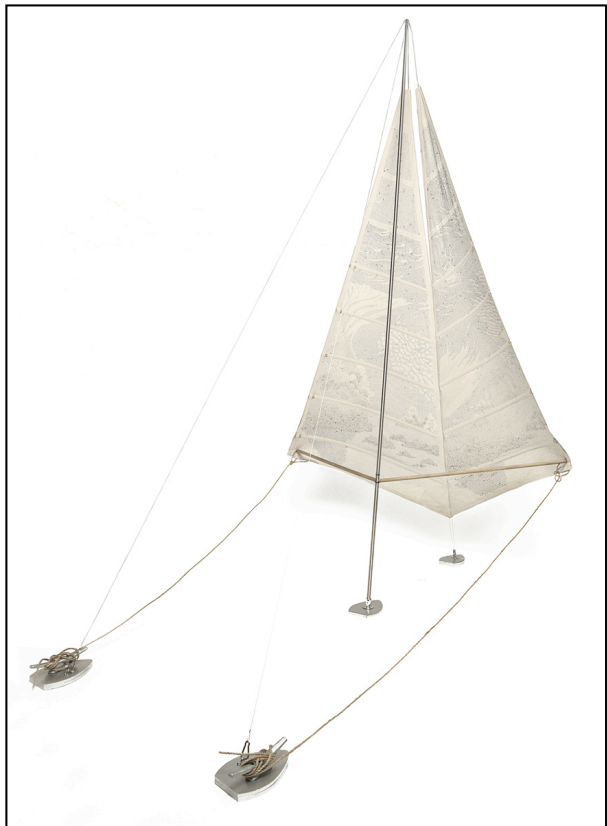
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<sup>2</sup> Randolph Johnson (April 24, 2012) <http://www.gizmag.com/next-gen-ships-sails-lower-fuel-use/22289/>

<sup>3</sup> Michael Mainelli - <http://www.lady-daphne.co.uk/nymph-news.html?id=18>

mariner must still read the physical world around the vessel.<sup>4</sup> The warnings nature writes on the waves and in the sky are crucial. Our conversation reminded me of a trip with my late Father. We were sailing in a narrow inlet, the sun shining, everyone relaxed. Suddenly he said, take down the mainsail. He was the captain and my mother and I were used to jumping when he said jump. He pointed to a sheet of cloud that was curling over the mountain beside us. We took down the sail and minutes later the wind hit us, heeling the boat over like a toy. Had the sail remained up, the force could have broken the mast. For my research, I began observing and drawing clouds and made double-sided, embroidered samples. Reading the clouds is more than an idle pastime onboard.

In designing the kind of rig I would use for my *Cloud* sails, I remembered seeing images of smaller boats ocean cruising in very steady trade winds. They sometimes put up two jibs, like symmetrical wings. A friend of my parents' writes "One of the greatest sailing setups was when we were downwind and set two #1 yankees up on the forward jib-stays. Very nice....easy to control and (sailed) up to 5 knots in a light breeze."<sup>5</sup> The twin set of sails *Clouds* is embroidered with a running stitch, to make a sort of cloud atlas.



**Figure 3, left. *Clouds* 12' (3.5m) high x variable. Machine sewn cotton canvas, hand embroidery, stainless steel tubing, assorted marine fittings, sisal rope. Collection of the artist. Photo: Ted Clarke.**

**Figure 4, right. *Clouds* Detail**

In the heyday of the great windjammers, sails were working garments. It was a hard and dangerous life for the crew. There was no time to decorate the sails, yet the surfaces of the sails carried visual patterns

<sup>4</sup> Personal conversation, January 1, 2012

<sup>5</sup> Felton, Rod Personal correspondence, May 20th 2012

that quite literally chronicled their voyages. After weathering appalling storms and relentless sun, the ship's sailmaker patched and patched until they resembled a poor farmer's overalls. Henry David Thoreau, in his book *Walden*, describes seeing a railway car full of torn sails en route to being shredded to make paper: "Who can write so graphically the history of the storms they have weathered as these rents have done?"<sup>6</sup> I would say the patches are earlier chapters in the same history. Author Derek Harvey wonders why most ships only had one sailmaker: the work must have been unending. For the *Storm* sails, I used what was at hand for the patches: some damaged, embroidered table linens, and canvas scraps left from making the other sails.

On many sails you will see dangling lines of cord. These are called "reef points" and, when the sail is lowered a bit, can be tied around the boom to shorten the sail area in a big wind. For *Storms*, I made reef points and reefed the mainsail, in addition to the patches. Shortening the sail area in heavy winds is crucial. My Father made me a birthday card depicting a gale that took us for a ride. He had strung up the tiny sail we used for our dinghy, but it was plenty to keep us surging along. Racing sailors keep up as much sail as possible, pushing their luck in the quest for victory, often with hair-raising results.



***Figure 5. Storms 12' (3.5m) high x variable. Machine sewn cotton canvas, hand embroidery, stainless steel tubing, assorted marine fittings, sisal rope. (Boots included for scale.) Collection of the artist. Photo: Ted Clarke.***

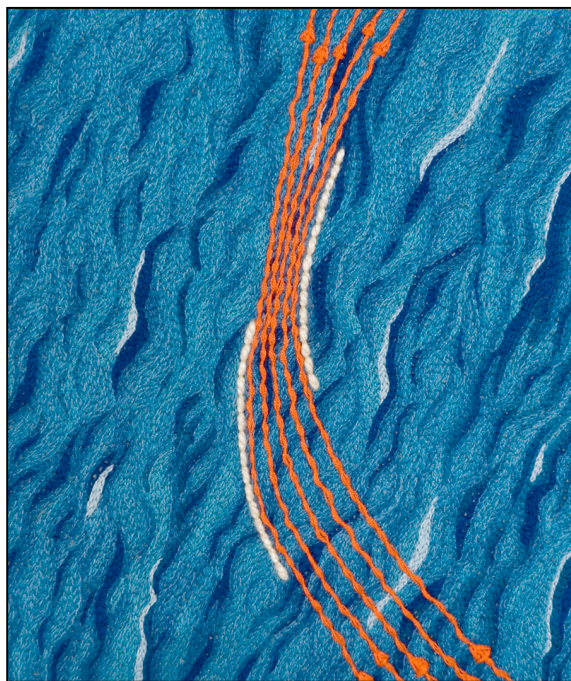
Finally, in every book about sailing, both how to sail and how to make sails, the authors inevitably include diagrams describing how they work. I found these interesting: some were straight forward drawings: here is the sail, this is how the wind goes by it, this is how the airfoil literally pulls the boat

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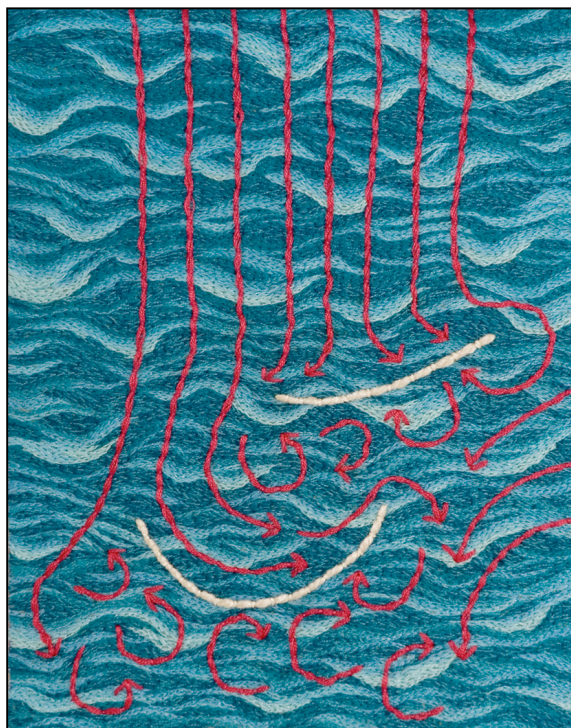
<sup>6</sup> Thoreau, Henry David *Walden* p106



forward. In others, they had jolly wind faces making curls, wiggles and bends. I embroidered a series of these diagrams. To me, they all have a proselytizing aim: Come away from the dark side, turn off that engine, haul up the main and come over into this world of motion and light and power.



*Figure 6. Close Reach 2011 51cm w x 66cm w. Hand embroidery on linen, mounted on stretched, unbleached canvas. Collection of the artist. Photo: Bettina Matzkuhn.*



*Figure 7. Downwind I 2012 51cm w x 66cm w. Hand embroidery on linen, mounted on stretched, unbleached canvas. Collection of the artist. Photo: Bettina Matzkuhn.*

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