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Translated into English by Kevin Smith
(Note: This is not a word for word translation of the document but an abridged version to give a general gist of it. I have left out references to sources and a few irrelevant detours and some unnecessary repetition or statements of the obvious.

The Ammassalimiut Kayak
Technical Evolution.
Authors: R.Gessain and P.E. Victor

We want here to describe the shapes and detail the changes over time to derive from this analysis of the shape of the kayak itself and its equipment some indications of the effects of prehistoric and historic contact of the Ammassalimiut on the one hand with the Inuit of South and West Greenland, and on the other hand, the Westerners.

The documents that we have had at our disposal since 1884 and earlier allow us to trace the changes in form of the Ammassalimiut kayak.
The following article describes the form and construction of the kayak: the acquisition of the materials required for the framework and cover, the shaping and assembly of the framework, preparation of the skin cover, the putting on of the cover, sewing, installation of the man-hole frame. All of these operations bring into evidence the strict sexual division of labour. The evolution in the form of the framework (stern, prow, bottom and shell) shows that before discovery of Angmassalik by the Danes, the Ammassalimiut did not live in technological isolation in spite of the remoteness of their geographical location. Already they felt the influence of the Southern part of the West coast and

indications suggest the coming of migrations from Canada and the Arctic Archipeligo by way of the North.

Description:
The kayak of the Ammassalimiut is a single seat vessel for hunting made of a frame from driftwood covered with fresh seal skin, stitched together. You get in through a narrow round hole. It is equipped with numerous arms and accessories. We describe successively the different elements of assembly and their method of fabrication.
We take the kayak such as we saw, studied and used in 1934-35, as the basis of our description and as reference to the modifications, both previous and subsequent.

Rhythm of Work and Cooperation:
Building a kayak, from beginning to launching is a set of operations unrolling in a necessary order. The different stages require work rhythms and various technical and social aspects.
The acquisition of driftwood and particular species of seals are the two basic necessities. But the wood has been collected long before because it has had to dry and has been put aside. It can be an object of trade. The seals cannot be saved because the skins must be fresh. The rhythm of the various of the various stages of fabrication of the kayak derives from these two necessary materials and the constraints of the differing time frames of their use. One can distinguish from these points of view, two time divisions:

1. A period of preparation, of discontinuous work where men and women work separately to prepare the different materials. It is the man's part to carve with a knife the bones and ivory, to drill the holes (figure 1) (in the teeth of big seals or narwhals, walruses being very rare at Angmassalik). He will make the deck straps (straps spirally cut in thick leather, wetted, stretched, dried, evened out and rounded). The woman prepares the twisted tendons for sewing the skins. This work is usually done bit by bit in spare time. It is a frequent pastime in winter evenings in the large communal house.
   It is in this phase that it is necessary to trim the pieces of wood, a task exclusive to men (figure 2). It is a steadier work, usually done outside, because of the space needed. It is done on a flat surface, a veritable temporary workshop, in the daylight period of the year, on earth or snow. There the elements of the frame are assembled, then the skin is acquired.. Only in summer can the large migrating seals (2 species) be caught. The difficulty for the hunter is that he needs, depending on the size of the catch, 2 or 3 seals. If necessary hunters cooperate to get them.
2. The skins having been acquired, the continuous work phase begins where men and women work simultaneously at complementary and urgent tasks: on the one hand degreasing, cutting and sewing the skins; on the other hand checking and finalising the frame, tensioning the skin, placing the manhole hoop, the straps and the bits of bone and ivory.

The frame:

In the open air workshop, the numerous pieces of wood are made by the man who will use the kayak or by his father or uncle if it is a boy learning to build his first kayak. The main material is driftwood: a log found on a summer ice flow which originated years ago in Siberia or Norway and was brought by the currents. The Ammassalimiut recognise and have names for different kinds of driftwood.

It is precious material, only used for equipment: boats, poles, handles etc. In 1935 some hunters sometimes used wood imported from Denmark. The pieces are shaped by adze and knife. The size differs according to the individual. (figure 18)

To assemble the frame, the two long boards that form the gunwales are first assembled, held at the right spacing by the deck crossbars.

Then the tenoned ends of the ribs are fitted into the mortises of the lower faces of the gunwales. The ribs were curved, often using heat, with a log as a form (in 1935). There are generally 19 frames with variable curvature; the most extreme V shaped. This curvature constitutes an essential technical difference from older kayaks, as explained later. Then the prow and stern pieces (notched (figure 4, 12 and 15) are fixed to the keel and gunwales and the stringers fitted. The deck cross bars are usually 7 in number for the aft deck and flat. There are usually 8 crossbars for the foredeck including the thick wide hogged crossbar (masik) (figures 4 and 8) a swell as the two cross bars forward of it (figures 4 and 7), also hogged. The manhole is completed by two wide boards running forward in the space between the keel and the stringers, whose length equals the of the legs of the user. Finally the 3 boards for reinforcing the forward deck are attached by mortise and tenon forward of the thick 'masik' (figures 4 and 12). A groove (figure4) is carved in the fore and aft junction of the gunwales to take the thickness of the hem of the longitudinal seams.

This is all done with the greatest care. The placing of the elements and especially the ribs is accompanied by frequent sightings from back to front and front to back to assure perfect symmetry to the structure. The parts are traditionally held by wooden pegs in bow drilled holes, certain ones are lashed, such as the ends of the gunwales; in 1935 nails and screws were also used. The sketches (3) show parts and assemblies of the frame.

The frame thus prepared (figure3) is ready to cover. The bottom of the hunters tunic attaches to a slot on the outside of the manhole hoop. The tunic is made of waterproof leather and is hooded, called 'qaiartsik'. It enables the hunter to become one with his boat, to roll without water getting in.

The Cover:
When the frame is ready and the seals caught, the kayak can be covered with fresh skins having natural suppleness. It's the work of the women to prepare these skins, remove the fat from the inside and hair from the outside, cut and sew them etc. Usually it is the hunter's wife who does it. If he is not married, it's his mother, or in order of preference, oldest sister, other sister, aunt, in any case a relative. Usually another woman of the family helps the one traditionally in charge. For thread they use seal tendons, a thimble of thick leather and a specially shaped knife appropriate for their sex.

Species of seals that can be used:
Three sorts of large seals are used at Angmassalik to cover the kayak. One is resident and can be hunted all year (aneq). The other two are migrants and can only be caught in summer when the ice flows are breaking up. (niniarteq and nalingineq). A good hunter changes skins of his kayak every year if possible, or at least every two years because old skins are dry and rip easily from knocking against ice: water entering the boat results virtually in certain death for the hunter. So times of hard hunting not only expose households to famine but also endanger the lives of the hunters who not being able to get a new skin, increase further the risks by having to use old skins.
One kayak needs three nalingineq or two niniarteq or aneq skins. Aneq is considered the best for this use. When both sides of the skins have been prepared and the holes left by the removal of the front flippers sewn up the operations of cutting, sewing, adjusting the skins and the straps on the frame occur in an order which is always the same, in which the participants will be according to the phase, male or female, the gender division of work being strictly observed in this group of Inuit.
In the case of two skins (figure 6), the first is cut by the woman who, after having removed the head and back flippers, separates the skin into two with an oblique cut passing in front of the position of one flipper then backwards between the nipples. (5)
For the second skin, only the head and back flippers are removed, and then it is all sewn together as shown in the sketch (figure 6). Eyelets are cut in the skin to take the tension straps when the cover is fitted.
Whether two skins, one of which is cut, or three skins are used, there are always transversal seams, which end up vertical in the finished kayak.
The abutting skins are joined using two folds of unequal length in two phases as the sketches show (figure 7)

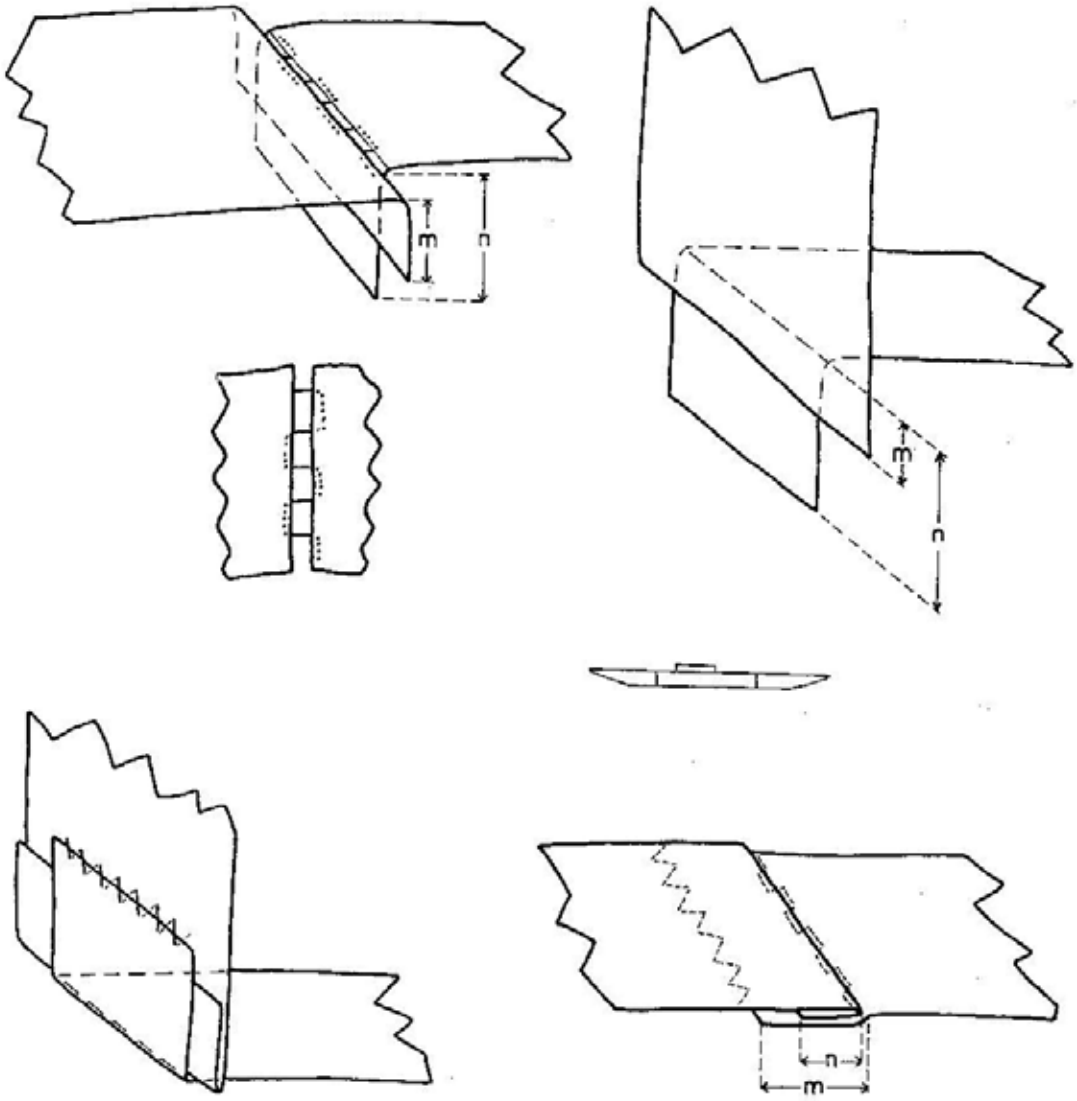

Figure 7. - Sewing the Cover; Ist Stage, Crenel Sewn, 2nd Stage, Folded Over

1. By 'Crenel' stitching, the thread passing through the thickness of the skins.

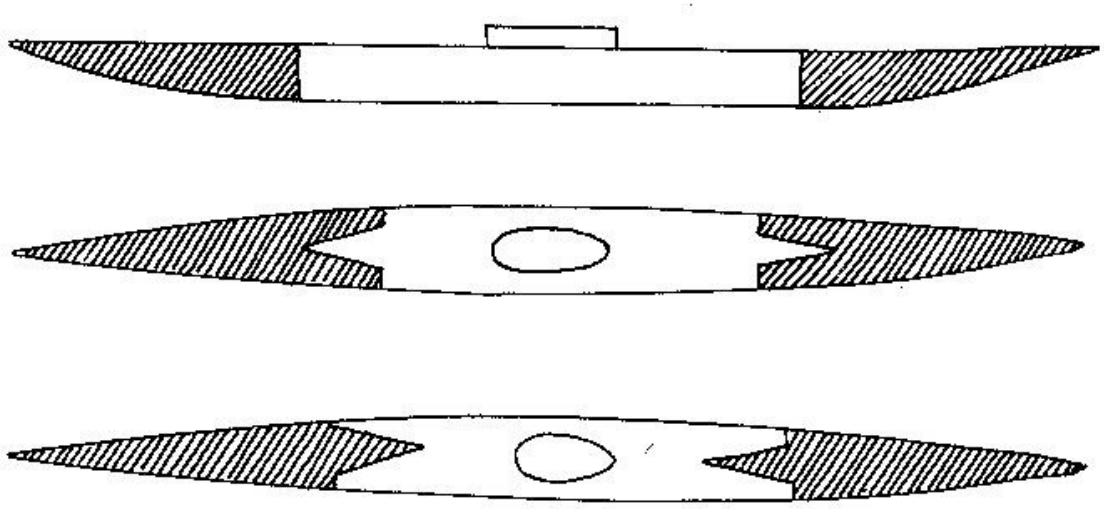

Figure 8. - Various methods of Assembly of the Skins (Dark And Light)

2. By sewing the wider flap over the narrower with a 'saw tooth' stitch. These flaps (figure 7 m&n) are made such that they will be on the outside of the kayak's skin.

So by assembling three skins or three parts obtained from 2 skins, a big oblong cover about 6m long and at least 1.5 m wide is obtained.

When this cover is too narrow to entirely cover the largest width (at the centre) of the kayak, two triangular pieces of skin are added at the front and back of the manhole, stitched the same way as the transverse seams. The hunters often alternate light and dark coloured skins for beautification (figure 8).

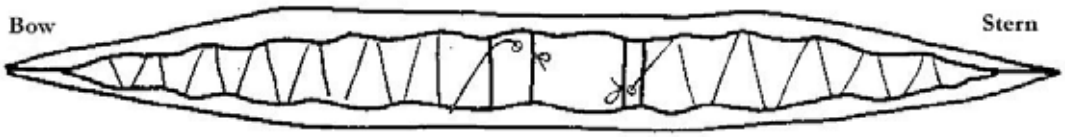

Figure 9. - The Two Straps Holding the Cover in Place

Figure 10. - Detail of Method of Fixing the Deck Straps

Fitting the cover and the deck straps:

The frame is placed on the cover, which has been spread flat on the ground. The cover is folded over the frame such that the inside faces of the skins face the inside of the boat. Two temporary ties (sometimes string in 1935) passing through the little eyelets or temporarily sewn into the thickness of the skin are tightened, thus securing the initial

placement of the cover. Each of these ties starts from a hole in the crossbar (masik, figure 4 & 8 and ercepik., figure 4 and 6) and zigzag out to the ends. (figure 9)
When this first adjustment of the cover has been checked carefully and the ties pulled tight, before the frame is sewn inside the cover, the thirteen deck straps are placed. They are to hold the numerous pieces of equipment.
These numerous straps, from the point of view of their length and method of adjustment, divide into two groups. The first group consists of the straps of the forward and aft extremities, which are short and fixed to the wood of the gunwales independently of the others. They are definitely stretched before the envelope is sewn because they are inaccessible afterwards. In the second group, all the other straps are actually made up of a single strap for the foreward part of the deck and another single strap for the stern part of the deck. They can be given their final tension and decorated with bones and ivory after the skin is finished because their ends at the boats centre remain easily accessible at the front and back of the manhole in the masik and ercerpik
The two latter straps are laced on top of the cover perpendicular to the long axis of the kayak and under the cover to the long axis of the kayak and under the cover obliquely.
All the straps go through the gunwale through drilled holes, and through the cover without endangering the water tightness, because when skins and straps are wet they have a tendency to swell.

Sewing the Cover over the Frame:
The relative elasticity of fresh skins permits the cover to be stretched tightly by the temporary zig-zag straps. The man checks for the desired degree of tension by pressing his fingers on the skin. The seams which ensure the closure of the cover over the frame run longitudinally from each extremity to the manhole. (figure 11) The threads are pulled tight to tension the skins. The sewing starts at the extremities and proceeds towards the manhole. After the second line of stitching (hem) is finished, the excess skin is trimmed (figures 12 &13) theses trimmings belong to the seamstress; they cut them up and cook them and eat them seasoned with raw fat (yum!)
In the 19th century needles were made by the women hammering iron (found in flotsam from shipwrecks, or traded during long voyages to the south.) At present the needles are brought in a Danish store. The old people say needles used to be made of bone.

Placing the Manhole Hoop:
When the double longitudinal seam has been completed, the entry hole is cut in the centre of the cover, by the woman using the hoop as a guide. The hoop also has to be at the right height because it is held in place by the tension of the skin: numerous little eyelets are pierced with the point of the ceki into the skin around the edge of the hoop. Thus the skin is attached to the hoop by numerous pegs rather than sewn. This work is done by the man with a special little tool like a lever to hook each hole in the edge of the skin over the corresponding peg (figures 16 &17).
Finally, the man fixes under the keel long narrow bone pegs into drilled holes. Sometimes the pegs are pushed into their ends, sometimes 2/3rds of the way in, in the rising parts of the bow and stern. The kayak has then taken its definitive shape. It will be dried, which will make the skin stretch even more tightly over the frame.
It is perhaps during these few days that the hunter threads onto the fore and stern deck straps several dozen plaques, cubes or beads of ivory or bone, making this light solid boat which is marvellously adapted to its function, into an object considered beautiful and distinguished by the number and quality of its ivory pieces as belonging to so and so.
When the skins have dried, they are rubbed with seal fat, then coated with thick sticky old oil made from leaving pieces of fat in the sun.

The seams are thus treated with particular care. From the beginning of putting on the skin cover except for when it is being worked on, the kayak is placed on a scaffold to protect it from the appetite of dogs (or bears) which would eat the skins (figure24). But as a rule, dogs are held apart from everything they can eat in summer; formerly they were put on little islands with meagre rations, nowadays they are held on long chains. During summer if the kayaks are left on the gravel, the dogs are kept away, but the normal place of a kayak is on a scaffold made formerly from driftwood or more rearely of stonework.

Dimensions:

We publish in the table (figure 18) fifteen measurements made on twenty two kayaks in 1934-35, to which have been added the height of seventeen hunters and some weights. To try to find a correlation between the physical size of the hunter and the size of his boat; we have not found any evidence of a correlation. The shortest kayak, 515cm and the longest (590cm), belong to men of the same height (167.8cm and 168cm). Nor does the length of the kayak relate to the ages of the hunters.

To complement the data we show a table of kayak measurements made in 1905 (eliminating #5 which was a learners kayak) was under the mean of 1935 but we cannot infer from such a small number of cases that the length of the kayaks increased between 1905 and 1935 (figure 21).

The only dimensions that we know are in close correlation with the body measurements are: the height of the kayak interior (figure 19,6) where the thickness of the thighs must fit, and the support bar. A man fits into a kayak like a foot into a custom made shoe. Also, a sealskin placed on the bottom where the hunter sits, helps him slip his legs in. Our figures are few; studying a greater number might have revealed some correlations. However it seems it is not in the relationship of length between man and boat that we need to look for the reasons for the remarkable difference between kayaks. We note that a long kayak is more stable, particularly in a swell, its draft, for as given weight of occupant, less; it requires less effort to paddle, it can carry greater cargo (catch placed on the deck); but is less manageable, changes direction less easily and less quickly, especially amongst fragments of ice flows. A short kayak doubtless requires more ability to balance, but is easily transportable on a sled in winter so different lengths of kayak could be considered as corresponding to different ecologies and seasonal adaptation. The shortest would be those of hunting areas in calm waters – depths of fjords, enclosed ice banks, channels in archipelagos, zones of clear water in the winter ice shelf. The longer ones for mouths of fjords, open ice flows and the open sea where there can be a swell. Our material, not large enough and only referring to two villages does not permit us to confirm this hypothesis. Several hunters had two kayaks, short one for the season when they had to carry their boats on sleds, a long one for summer.

Evolution of the Morphology of the Frame:

Before 1935, the Ammassalimiut kayak underwent important changes in structure. According to what old hunters told us in 1934-37, and to what is found in the texts of Holm (Observations 1884-85) and Thalbitzer (1905-06 we can recognise various stages in the evolution of the form of kayak at Angmassalik.

Form of the bow and stern:

1. Before and up to 1884 the kayak had both ends upturned (figure 22)
   Figure 22 is of a small scale model made by Napartuko (born 1862) representing the shape of the kayak he had seen and used.

He described in 1905 the old style kayak, saying 'the stern was a little more raised than the bow, and the part around the manhole was a bit higher nowadays'

2. From 1894 there was no longer a single kayak of the former type with one or both ends raised. They all had horizontal ends. The fashion of south-west Greenland had been imposed. That was how we found it in 1935 (figure 4). We note, concerning the form of the ends, that the former kayak of Angmassalik was similar to that of certain Inuit of Northern Canada (MacKenzie and Aiwilik for lake kayaks) while recent form, with prow and stern horizontal, was identical to that of south west Greenland, Baffin Island and the extreme north of the west coast of greenland; Polar Inuit. The latter had received the kayak from a 19th century migration of Baffin Island Inuit.

Forms of the bottom of the hull:

The oldest form, with raised ends, had a different section form from that seen in 1935. In effect the ribs were then not U-shaped, consisting of a single piece of wood, giving the hull a rounded form: the base was mad of cross pieces each fixed to side brackets, thus giving the kayak a flat bottom. The heaviest elements of this hull, not pegged but lashed with thin straps, were constructed based on the umiak. In 1894 the Inuit of East Hudson's Bay had ' flat bottomed kayaks; bottom and sides were like those of the umiak. An Ammassalimiut was reported as saying in 1905-06 'originally our ancestors did not have kayaks, but had umiaks'

According to a legend recorded in Angmassalik; 'I'm now going to tell you the story of a man who used a woman's boat instead of a kayak.

It must be a very old story because the old people say that long ago there were great differences between kayak and umiak. In those days kayaks were completely open and without 'tipet' (small ribs attaching the keel to the upper part).

The existence of the kayak is proven at Angmassalik (by harpoons and other items of equipment) at the most ancient levels: 1350-1400 according to Th. Mathiassen. However it seems at the present state of our knowledge of archeology that on one hand hunting seals on ice was more important than hunting them in kayaks, because the inhabited places were mainly in the interior of the fjords; and on the other hand hunting baleen whales implied hunting umiak propelled by rowers (87 whale bones in 139 worked bones).

Parts of harpoons of bone, ivory or stone, but no part of a kayak frame have been found in the oldest archeological sites. This is explained by the very bad conditions for preserving wood in the ruins of Angmassilik. Archeological observations tell us nothing about the form of kayaks of past centuries.

Thus the study of the shape of the kayak indicates and old form at Angmassalik recalling that certain groups of Northern Canada and a recent form derived directly from that of the south west coast of Greenland, as if the old influences were conserved at Angmassalik, or even reached there without passing by the passing by south west coast.

In summary there is evidence at Angmassalik several forms of kayak succeeding each other over time.

- an old form with raised ends and a flat bottom before 1884
- a form with only the back end raised and a rounded bottom seen since 1884
- a form with horizontal ends and a flat bottom, described in 1905-06
- a modern form with horizontal ends and a rounded bottom

Raised ends and flat bottoms are two archaic elements which gradually faded out. Different forms coexisted at different periods. Considering them as opposite, the old one recalled the structure of the umiak, the modern one with curved ribs and lighter, all the other forms temporary intermediaries, they indicate the evolution from the old rather

heavy kayak to the modern kayak strongly influenced by the techniques of the West Coast. We see a precise and well dated example of diffusion of technical form which confirms contacts between Angmassalik and the south west coast before (European?) discovery in 1884, and the speed of adoption by this people of the three fjords of all that which, coming from the outside seems a better method to them: this underlines the intense interest this small population shows for new forms and techniques.
(to be concluded in a later article)

Note from the translator:
This is how I have translated some technical terms – other people might have better ideas.
Courroies – straps (mainly those across the deck)
Cintre (m)(du trou d'homme) – manhole hoop
Plat-bordon(m) plat-bords(pl) – gunwales
Barrel(f) transversale du pont – deck crossbar
Barrel longitudinale mediane – stringer (chine better?)
Membrane(f) - rib