FIG. 69 Parthenon frieze: apobates. Courtesy Alison Frantz

weighted loom, a deduction that is doubly strong since this is the only large loom for which the art and archaeology of ancient Greece give us any evidence.

The use of the warp-weighted loom means, however, that any piece of cloth woven on it is likely to have been no more than four to six feet in either direction. (The widest loom recorded, either archaeologically or ethnographically, is 240 cm., accommodating a textile width of at least 30 cm. less than that.) To weave a wider cloth meant obtaining a loom beam and a shed bar that were longer than usual, and correspondingly heavier. Wood was scarce in Attika, but if money were no object, one could imagine widening the loom by perhaps another foot or two, but it is hard to justify more. Making the cloth larger in the other dimension would be easier, but that too had its difficulties.

To weave a longer cloth meant fitting the loom with a roller-beam mechanism at the top (it is not entirely certain from the representations we have as to when such a device was invented), or finding some other way to keep the working part of the warp within reach of the weaver. The Etruscan pendant, for example, shows the weaver sitting on a balcony; contemporary Hallstatt weaving huts sometimes had trenches into which the extra warp hung down; and the little Corinthian arybal-los depicting the weaving contest between Athena and Arachne (see fig. 65) shows the women standing on little stools or platform shoes.[18] Clearly, any attempt to lengthen the warp involved considerable adjustments: hence it may be considered possible but not very probable. Even with a roller beam, one is faced with the formidable task of retying all the weights on the warp every time the warp is rolled any sizable distance. To get a substantially larger textile, such as might be needed for a sail, one would have to weave several cloths and stitch them together.

The usual estimate for the size of an ordinary Greek woman's peplos (fig. 70), the genre of garment that interests us here, is at most five feet by six, based upon the average height of Greek women at that time and upon the way we see the dress draped on ancient representations. We can see that this matches what we know of typical cloths from the warp-weighted loom, and in fact the dress style was almost certainly at least partly a function of what the available loom made it convenient to weave. The size in turn gives us a good basis on which we can make some other interesting estimates, such as how much wool was needed for such a dress and how long it took to process the wool.

For comparison, a 5′ by 6′ handwoven woolen pile carpet in my collection weighs around seventeen pounds; it is far too heavy to wear and too stiff to drape. On the other hand, a handwoven Polish peasant cape of worsted wool (close to what I would have expected the Greeks to be making and wearing), 3′ by 6½′ in size, weighs a mere one and a half pounds; a 5′ by 6′ cloak of this material would then weigh something under two and a half pounds. These two figures can safely be taken as outer limits for the weight of the ordinary peplos worn by an Athenian woman, with the true figure clearly lying near the lower end. In both Mycenaean and medieval times, a sheep seems to have yielded an average of 1.6 pounds of wool,[19] so for the sake of round numbers let us assume that the garment required the fleece of two sheep, and ran about three pounds—a reasonable cloth both to wear and to produce on a warp-weighted loom.

A woman accustomed to using the European drop-spindle has estimated that she could spin two ounces of prepared wool into the requisitely fine, two-ply worsted yarn in about three hours. To spin three pounds of wool thus amounts to twelve days of spinning for six hours a day. So let us give a generous estimate of a month for one person to clean, comb, and spin the wool for a peplos. My own experience suggests that it might take at most a week of two people helping each other to make and set up the warp. Then the weaving can begin. If the weaving is fully mechanized—that is, plain-woven with

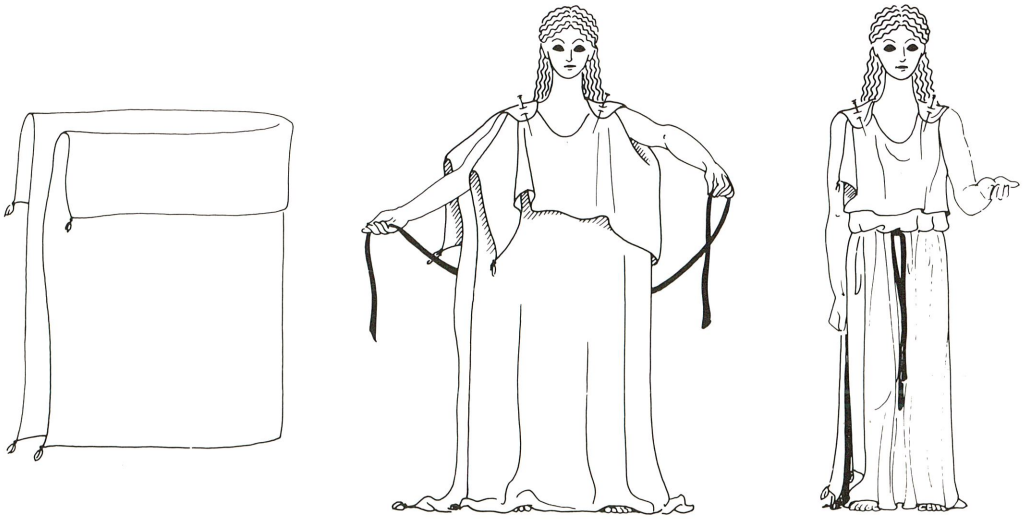

FIG. 70 Diagram showing how a peplos is worn

or without stripes, or woven in a fairly simple twill—one could weave the necessary five to six feet in a few days, especially if two women are working the loom together, as we know they often did.

We know, however, that the peplos of Athena was elaborately figured with Athena, Zeus, giants, horses, war-chariots, etc. That sort of pattern-weaving takes a huge amount of time by any technique, because, since each figure is unique, it has to be darned in carefully by hand. We know also that the priestesses were allotted nine months in which to do the job, a time-span commensurate with intricate pattern weaving but absurdly excessive for a plain peplos. Let us see, then, what we can deduce about patterning techniques.

The most well-known method of weaving pictures into a cloth is, of course, tapestry. True tapestry involves running each color of weft across the warp only where the color is wanted for the pattern, and packing it down so hard that the warp doesn't show at all. Tight packing requires extremely high tension in the warp, and unless the packing is tight, not only will the warp show through and spoil the effect of the color fields, but the fabric will tend to fall apart when taken off the loom, partly because there is no single weft that goes all the way across the fabric to stabilize it.

We have already seen that the warp-weighted loom rules out the use of true tapestry technique because of insufficient tension. But there is another way of weaving a dense color-field of any shape in any place (which is what is required for depicting people, animals, etc., on a cloth which tells a story). This is the old European method, inherited by the Greeks, of floating a colored pattern-weft across the top of a ground-weave. That is, one weaves a plain background cloth as usual, but between each row of ground-weft (one that goes all the way across and holds the cloth together) the weaver inserts an extra colored weft-thread, bringing it to the top as needed to form the pattern, and otherwise leaving it to ride behind. Hence the technical term, supplementary weft-float pattern. (The reader may have seen typical Colonial New England bedspreads made this way.) If the pattern thread is a bit thicker than the ground thread, it will cover the ground threads entirely, giving much the same illusion as tapestry. The same trick can be done in the warp direction with extra pattern-warps, as in the belt from Lefkandi (see p. 104), where thick colored threads of wool formed the pattern against a ground of fine white linen. Note that the basic cloth is thus used as a ready-made background for the figures being created by the pattern threads, a feature which can make a weft-float story-cloth quicker to weave than a tapestry one, and therefore less costly. (In true tapestry there is no such background, since every bit of space has to be filled in separately by the pattern-wefts.) We will return to the question of cost presently.

There are two basic ways to handle a floating supplementary weft. One is to have a pattern bobbin for each and every little area to be filled in with that color (much as in tapestry, but over the ground-weave). The other way, far more efficient when one color is being used a great deal, is to carry the pattern thread all the way across the cloth each time, bringing it to the surface where needed. This method is very efficient for small, repetitive, all-over patterns, which are what the Minoans (for example) had specialized in, and is almost certainly the variety of weft-float that the Greeks had inherited from