

The Gloria F. Ross Center for Tapestry Studies Annual Lecture 2000

The Beginnings of Tapestry Weaving

Dr. Elizabeth Wayland Barber

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UCLA Fowler Museum of Cultural History

Introduction by Ann Lane Hedlund, Ph.D., Director, The Gloria F. Ross Center for  
Tapestry Studies

*(ALH)*

Good Afternoon, can you all hear me in the back? Ok. I want to welcome you to the second Gloria F. Ross lecture, ever. My name is Ann Hedlund and I am the director of the Gloria F. Ross Center for Tapestry Studies. We are located at the University of Arizona in Tucson.

Thinking about being from out of town, I am interested in how many of you have come from outside the greater metropolitan area, beyond Los Angeles. *(General murmuring.)*

Welcome. And how many of you are from outside California itself? I am so glad to see you all.

We are really glad to see those LA people, too! Are you members of the Textile Group of Los Angeles, or the Textile Museum Associates? A number of you are. That's good to know also.

And finally, I would like to acknowledge our very small but growing membership in the Center for Tapestry Studies. There are a number of you here, also. I know some of you in the front rows are members. How many are here from the center itself? Well that is good to see. We hope that we will grow those members.

Out in the lobby many of you have already discovered that we do have membership brochures and we are looking at all kinds of programs that we can establish to enhance our membership program at this point. As those brochures will also tell you, the Gloria F. Ross Center or what we call oftentimes the GFR Center – (in her lifetime, Gloria often referred to herself as GFR so it's very appropriate that the Center takes on and carries on the tradition that she used in self-referral)—in any case, the GFR center is devoted to the understanding of tapestry both in terms of the public awareness and in terms of scholarly research behind the scenes. We are interested in sharing tapestry's aesthetic and technical intricacies and I know that many of you here today know a lot about that. We are also interested in the ways that tapestry has exerted influences at various times through history on society in one way or another.

We are an educational foundation and a research institute. One thing that is easy to clarify is that we don't hold collections, like a museum. We are not a museum. We

instead institute public programs, just like this lecture. We also conduct research ourselves; research that results in books, articles, exhibitions, as well.

We especially like linking up with other organizations. As a very small and new foundation, this is very much a survival tactic, but it also is simply a way to know that we are conducting our mission, reaching many people. We look for kindred organizations and jointly share textile information with the public. We consider ourselves, for instance, dedicated supporters of weavers guilds, of collectors groups, of professional membership organizations, like the Textile Society of America, and of course, also with museums, with textile holdings so that you will see at times that we are affiliating with the Textile Museum in Washington. We live at the Arizona State Museum in Tucson. Here we are at the Fowler Museum for one of our events. And certainly this is one of the reasons that it has been a real pleasure to work with the Textile Museum Associates of Southern California and also with the TGLA, the Textile Group of Los Angeles.

In connection with our links and networking, I also want to note that we are involved in the American Tapestry Alliance tapestry retreat that is organized just following Convergence in late June this summer. I am sure a number of you know about this. Jean Pierre Larocchette and Yael Lurie, who are here today from Berkeley, are the artists in residence there. The gathering at the University of Kentucky, late June, should be a wonderful event. If you want more information, I have a phone number for you. Jean Pierre you can reach at 510-548-5744. And I am glad to repeat that for you at the reception afterwards.

Let me tell you a little bit more about the GFR Center. We were founded two years ago by the late Gloria Ross, who had a long career in the world of tapestry. She worked with well-known American painters, as many of you know, and with weaving studios in Scotland, with Archie Brennan who is here today, and in France, with the Aubusson workshops. She worked in the American Southwest with Navajo weavers and also with Hopi weaver Ramona Sakiestewa. Then she worked on rare occasions as far away as China in her far-flung career.

The resulting GFR tapestries remained in classic tapestry technique and this is hinted at in our tiny little diagram in the program that you picked up when you came in – weft-faced plain weave with discontinuous weft patterning. We tie to the very classical definition of tapestry but we are also very interested in its broad ramifications and potential variations as well. This technique of course goes back to the ancient world, which is the focus of today's talk. It flourished in the European workshops centuries later and for centuries. And it is still used by many talented weavers, and I know there are a number of you in the audience today.

Our own interests, as the Center for Tapestry Studies, go well beyond GFR's specific work and her business endeavors. She also had a very, very strong role in tapestry scholarship. So our programs encompass many facets of tapestry: design, tapestry production, tapestry collecting, whether it is in museums or in private hands, and certainly tapestry conservation as well.

We expect this GFR annual lecture to become indeed an every year event from now on. Our first lecture was held at the Yale Club in New York City in 1998, two years ago. We skipped one year. It was co-sponsored by our good friends at the Textile Museum in Washington, DC. To inaugurate our series, we invited none other than master weaver Archie Brennan to give the lecture and he reflected on five decades, his own five decades, in tapestry, but went on to muse about well over five centuries of tapestry weaving in the process.

Tonight, as I say, is our second lecture. Two years later, after a daylong meeting of our board of trustees. Yesterday we held our annual meeting here in Los Angeles, as well, so we know that we will have a lecture next spring 2001. It is our intention to alternate our lectures between East and West and also to alternate them between scholars and weavers, and potentially, between collectors and curators, as well. So you'll see a variety of themes coming out through the long-term series. We will move around the country as well, East to West, as I say. So, next year look for our annual lecture to occur somewhere in the East. Keep your calendars open for March or April 2001.

The Center's entire board of Trustees is in attendance today and I would like them to stand up and be recognized, if you would please. Ann Bookman, from Boston; Archie Brennan from New York, be willing to remain standing—I am doing this on purpose so you can find them afterwards during the reception, as well, Margi Fox from Bellingham, Washington; Susan Brown McGreevy from Santa Fe, and Alice Zrebiec from Santa Fe

and Denver—The Board of Trustees of the Gloria F. Ross Center for Tapestry Studies.

*(Applause)*

Also the center's administrative associate is here. I couldn't do it without her. And I know many of you spoke to her or emailed her, this is Angelica Afanador and if you would, she may be, she is standing up already, she is in the back of the room.

I also want to thank some people a bit more local, --Dr. Patricia Anawalt and Barbara Sloan of the Center for the Study of Regional Dress here at the Fowler Museum were instrumental in our establishing this lecture here. Thanks to Jose Garcia and the staff of the Fowler who have been very, very gracious to us. Special thanks also to my favorite pen-pal—I am going to sound like Garrison Keillor now for awhile—but indeed Cheri Hunter of the Textile Museum Associates was a faithful pen-pal and responded to all my questions about traffic patterns and timing and everything else that goes on in Los Angeles that I don't know a thing about. Stephanie Morehouse from the Textile Group of Los Angeles did the same and I am really grateful to their suggestions, help in sending invitations out and very specially, for small grants from both of their organization that helped co-sponsor this event.

I am also, and this is my last thanks on a long list, grateful to Sharon Takeda, Dale Gluckman and Sandy Rosenbaum, and the entire staff at LA County Museum of Art who were very helpful in and supportive about our holding a lecture in Los Angeles. It is really neat to find a network that you all have in terms of textiles.

Following this lecture, I hope you all know that we do have a reception. Please join us for a tea time reception out in the amphitheater, -- the weather has cooperated with us, which is wonderful, and I hope you have a really good chance to speak with our board and with others. I know you are seeing many old friends, I hope you make some good new friends also.

Today's speaker, Elizabeth Wayland Barber is, I have learned, no stranger to Los Angeles. It is very clear that she has a very strong following and from the people who have come from afar – it is not an only Metro LA following. She is prolific in both her thinking and her publishing, and she is very, as you know, generous with her time and her fascinating thoughts.

We feel very lucky to catch up with Elizabeth Barber. Just last month she spoke on National Public Radio about her archaeological investigations. I should tell you she is all over the websites. Next week she'll be keynote lecturer at the Biltmore Estates North American Textile Conservation Conference in North Carolina. In between she finds time to teach a very popular class here at UCLA on textile and costume history and moreover to serve as a faculty member in the anthropology department at Occidental College. One afternoon here on campus she told me that maps are one of her favorite teaching devices and I suspect that we will see a few maps today. And I can really see why, because Elizabeth Wayland Barber is all over the map! She truly is.

Dr. Barber earned her bachelors degree at Bryn Mawr College and a doctorate from Yale University. Her principal interests are archaeology and linguistics, a very interesting combination, from early western Eurasia. She has a particular specialization in the development of cloth and clothing.

When Betchen, as she is known locally, and I first began discussing her delivering a lecture here, it was on the occasion of her receiving a major prize from the Costume Society of America for one of her books. It was the second time she had received that prize from that organization. She has, of course, been awarded many other prizes and grants fro her publications and some of those are listed on the program that I hope you all have. (If you did not get a gray single sheet program, please do pick one up as you go out.)

As time has passed and we have been planning the lecture I have learned more about some wonderful side interests that Betchen throws herself into as well. For instance, she directs and dances in an Eastern European folk dance troupe at Occidental College. I love the fact that her physicist father and her weaver mother also are world experts on playing cards and their history. Very interesting interest. We are in fact very glad that the male Dr. Wayland is here tonight. It is a great pleasure to have you here.

In today's lecture, of course, Dr. Barber delves into the earliest tapestries. She puts on her Sherlock Holmes hat – for any of you who are familiar with her writing, you know she often does that. This time she is seeking elusive and not always material clues to

explore the mysteries of how and why and where tapestry first took hold. Please join me in welcoming Elizabeth Wayland Barber. (*applause*)

*Do you want the lights to stay on?*

(*EWB*)

Can you all hear me? I have a portable mic on so I can run around as I usually do. Here you have 2500 years of history of tapestry on the board. On this side, a piece, which was found in Chinese Turkestan, which we'll discuss toward the end of the lecture, discuss in some detail. On this side, a rug that my husband and I bought in Konya, Turkey in about 1980 something. 1984 I guess it was. Anyway, I wanted to start with a picture of a global map but I didn't have one. I don't have anything that historical I am afraid in my slide tray.

For those of you who are not weavers, who are not tapestry experts, I thought I might start just by saying a few words about what tapestry is. And these are both really good examples, although they are woven actually, quite differently. What you see is that the threads go back and forth across the color field where you want that particular color, so you were making the cloth as you make the pattern. Which is something you have to think about when you're weaving these things.

There are other techniques which may have the colored thread float on the surface above a ground cloth which forms the cloth then you're not having to make the cloth in effect as you weave; your pattern threads are not forming the base of the cloth.

One of the things that this does is that if you have a vertical, if you have a change of color between that runs in the same direction as your warp, as you put your weft in you are liable to develop slits. And the antidotes for this are you can just go ahead and do that and sew them up afterwards. The Egyptians tried that at one point. Another thing you can do is share the warp so that you go around the same warp – that means you get kind of a wiggly line. You don't get a nice straight line between the color fields, you get a wiggly line. You also get a breakpoint. There is no particularly good solution for that except to design in such a way that you don't have any verticals in it.

Now over here you can see the way the typical tapestry is constructed, that is to say your weft, your colored threads completely hide the threads which are on the loom, the so-called warp. There are various ways of making that happen but the point is that you don't want the warp, which is of a different color, to show. So that's the most important stuff you need to know about what tapestry is.

Now, how far back do we have to go in order to find the beginnings of tapestry? Well, that's not entirely clear, but it's farther than 2500 years ago, which was the date of the piece that we just saw. And as you saw, that piece was already very elegant; therefore it was clearly not the beginning of the line.

Where I am going to start in this saga is back at the beginning of weaving, because there have been a number of claims made about the origins of tapestry, which I think I can demonstrate from three different directions simultaneously are false. And so, I am going to start back at the beginning and show how what the archaeological evidence shows about the development of tapestry weaving.

Now our very first proof that people are weaving comes from the site of Jarmo in northeastern Iraq about 7000 BC. That's the first proof of weaving and it occurs in the form of impressions on two different clay balls. Apparently the balls were set down while they were still soft on top of pieces of cloth. And this one is done in plain weave, over-one, under-one in each direction, and this one is already a variation on that, it's over-two and under-two in each direction, which is called basket weave.

The weaving, as you can see from the scale, is very fine, very even and they've already got even variations so this is clearly not the beginning of weaving but is the first actual proof we have. My best guess is that weaving started a little farther north, probably up in this area somewhere, (gesturing at map) more like 10,000 BC, several thousand years earlier. This is the first proof we have.

We now have a piece of true weaving from the site over here called [**China Detendency**] which is the same date, 7000 BC.

Now we have a number of sites where we find cloth preserved, actual cloth. One from about 6500 BC down here in Israel from a dry desert cave, then a whole group of fabrics from the site called Çatal Hüyük in central Turkey from about 6000 BC. This is a piece, one of the pieces from Nahal Hemar that is twined rather than true weave and, in fact, we don't find any true weave down in the southern part of the ancient Near East for awhile. The true weave that we find is always up here, fairly far to the north, which is one of the reasons I think that the idea of true weaving started up here.

And when we get to Çatal Hüyük we find that there is quite a wide variety of textiles. Now the textiles happened to get preserved -- I mean it takes a lot of special circumstances to preserve textiles 8000-9000 years -- and in this case what happened was that people were, and this is a reconstruction of one of the houses and you notice the wall paintings here and these platforms, these platforms were probably covered with grasses or rushes or something like that and over that were put mats or textiles and that would make nice, comfy cushions, sofas, beds, and so forth where you could sleep at night and do your work during the day-time, sitting on these sort of couches. I suppose that makes that the world's first coffee table where you could put stuff and have coffee!

I wouldn't particularly have wanted to spend tonight in this particular room because the walls are decorated with giant vultures pecking at headless corpses. The reason I chose this particular room is because this explains to us how it is that we get our textiles. What they did when someone died, apparently, was to preserve the skull for ancestor worship and to lay out the rest of the body for vultures to peck clean of flesh. This was called

excarnation and then they would go and collect the bones that were left and wrap them up in textiles and they would place them under these platforms so they could literally sleep with the bones of their ancestors. Wouldn't that put it into perspective problems we otherwise might have? Well, when the village burned down, about 5800-5700 BC, the textiles surrounding these bones that were under these clay floors carbonized, because of course there was no oxygen under the earthen floor and so they simply carbonized and so the outside of the fibers carbonized and that made them quite unpalatable to the little rodents that would have otherwise munched them up. So, here you see these packages of bones wrapped up in textiles. Of course, they are so crisp that you can't unroll them but we have quite a number of examples.

The packages were tied up in tapes that have the selvages on either side. In other words, they were woven as narrow tapes. There were large pieces of cloth, very finely and evenly woven. They range from coarse to fine -- you can see a very beautifully knotted fringed edge along here -- see the fringe and knots. Here is a rolled and whipped hem. Here is a close up of a twined piece.

Now at Nahal Hemar everything is either twined or needle netted, there is no true weaving. You get to Çatal Hüyük 500 years later and a whole lot of miles farther north and most of the pieces are plain woven. This tells us something very interesting that these people have discovered -- as long as they had not discovered how to mechanize the loom they did better by making twined fabrics. In twined fabrics, you twist two wefts around each other or else you twist the weft over the warp, and that gives you a very

stable fabric but it is a process that cannot be mechanized. Whereas the plain weave, if you can figure out a mechanical way of raising half the threads, you just shove your weft through that way and then you raise the other half and shove you weft through the other way and it goes very fast and the fabric isn't quite so stable, but you can get a lot more of it in a given space of time. So when we find at Çatal Hüyük that practically all of the textiles are plain woven, we know they have discovered the principle of mechanizing the loom and that is the thing known as the heddle.

Every year, in my textile and costume history class we have little table looms, little tiny things, you know, just square things they can wind some warp around and I set out various sticks and things beside them and invite them to start weaving. Of course they start sticking their weft in over one up and one down pretty soon someone says, "Hey guys, you know this goes a lot fast if you stick one of these sticks in." And everyone says "Oh, look at that." And I say, "Yes, you've just brought us forward 50,000 years."

And you know something? No one has ever thought of the heddle, the shed bar. Sticking a stick in, that's easy, but you can't stick two sticks in. If you have ever woven you know that those two sticks are going to interfere with each other. You need to invent a discontinuous stick and that is a very, very complex notion. But these people must already have had it, for the statistics of the type of fabric they make to be what they are.

So we know that by 6000 BC the people in Anatolia and the northern part of Mesopotamia knew the heddle. The people down south didn't. It seems to have spread from there.

Now it turns out that all of the textiles from Çatal Hüyük turn out to be made of flax, that is linen. These are some flax plants growing in my back yard. The excavator of the site of Çatal Hüyük kind of jumped the gun when he published the site and he said the textiles must have been made of wool because they found all sorts of sheep bones. They hadn't happened to have found any flax seeds. But when they actually tested the textiles, they turned out all to be linen. He also jumped the gun by suggesting that some of the designs that were on the walls of the room were taken from woolen rugs made in tapestry technique.

And this is a myth that I want to slay.

Okay, first of all, it turns out that the textiles are made of linen. They were not using their sheep for making their textiles. Everyone undoubtedly recognizes that as a sheep. Ok, if you're so smart, what's this? This is the wild ancestor of the modern domestic sheep. This is what sheep looked like at Çatal Hüyük and there is nothing on the back of that sheep that you can spin. It has a coat like a deer.

There was so much ambiguity about it in the literature that I finally went down to the LA County Zoo. That is where I took these pictures. They happened to have some at that

time, but they later escaped! That's another story. I went down and asked if I could get a sample of what grew on the backs of these after I'd taken these nice portraits. And they said, huh? And I explained my situation and what I was trying to do and they said, "That's a very nice scientific thing you're trying to do there, we'd be happy to oblige but we try not to disturb the deer any oftener than we have to. But we have to give them a tetanus shot once a year, so if you'll leave your name and number we'll call you when it's time to give them their tetanus shot." So I gave them my name and number and went home thinking, well, that'll be an average of six months before I get my samples.

The next morning at eight-thirty in the morning they called and said "We just discovered that we have to give the sheep their tetanus shots today, can you get down here today, right now before the zoo opens." So I grabbed the kitchen shears and go running down to the zoo. Get there and ask "Gee, I wonder if their people have a little better tool, he'd gotten one of those electric shears, you know like they use to do the back of your neck in the barber's chair? So we went off to the sheep pen and grabbed the ram and gave him a shot and they said, "Okay, so you wanted to get some wool –here – and this guy with the shears turns on the electric shears right behind the ram's head, buzz! And the ram goes straight up in the air, wrenches loose and goes running around the pen and here's the zookeeper standing here with a great handful of fur. And he looks at this handful of fur and he looks at the sheep and he looks at me and he says, "Will this do?" (*laughter*) And I said "Gee, I--" Well by this time the other keeper had grabbed the ram and was wondering if he was bleeding to death from this great mass of fur that had come out but, no, there was this little round patch the size of a silver dollar, it was just nice and pink

and bare. No blood at all. I said “You know, you couldn’t have given me a better sample because I got absolutely everything that was growing on his rump right down to the root ends.” This is a small portion of what came out. This is modern sheep’s wool. This is the bit from the ram. He then said, “You want some from the ewe too? And I said “Gee, that would be nice.” So he reached over and goes YANK! (*Laughter*)

Okay, so I took my samples home and I looked at them and this stuff, which is what you see, is called kemp and it is about 300 microns in diameter. This stuff is about fifteen to thirty microns in diameter (sheep wool), so it is 10 times as thick and if you try to twist is, it just shatters, it is un-spinnable. It looks like perfectly nice fiber but it has no tensile strength. Now this little peach fuzz at the base is, of course, the insulation coat and there is a certain amount of that but that is only about five microns in diameter and less than a centimeter long, so it just kind of wads up like peach fuzz and it is pretty un-spinnable too.

It took 4000 years of inbreeding of these sheep, which were the first animals domesticated after the dog, to develop sheep that had this full wool on them. Wool, usable wool, does not appear to have turned up on these sheep until about 4000 BC. Çatal Hüyük was burnt down in 5800 BC so they could not have sheep with usable wool. So much for making woolen tapestries.

Here is, this is the only picture I have, this is the display in the museum, there are some stone-like, kilim-like patterns on some of these wall paintings, it’s a little hard to see, but

this is the kind of thing, they are equally easily made as map patterns. They do not have to contain as kilims and the fiber that we associated with making tapestries was not there.

Linen is very, very difficult to dye and, of course, it comes in only one color basically, off-white. It is very difficult to dye because the purpose of those fibers in the plant is to conduct water from the bottom of the plant to the top and back down again. If it absorbed water it would conduct it along the surface by capillary action. So, plant bast fibers basically cannot absorb things well, such as dye. Linen is extremely difficult to dye; you have to have just the right amount of mordant and so forth.

These are, by the way, the three types of weaves that are tested there. This is weft twining with wrap around the warp. This is weft twining where you wrap the two wefts around each other. And then what most of the fabrics were was plain weave, one of which had this funny reinforced edge, which looks like it might be a starting edge. And on the basis of that, and a couple of round blobs of clay about the size of apples that someone stuck their fingers through while it was wet, people have suggested that they may have been using a warp-weighted loom. That is a possibility, it is certainly not proved but if they were using a warp-weighted loom then that is a very poor loom, the poorest possible loom to be making a tapestry on because for tapestry you need a fairly high tension and you don't get that on a warp-weighted loom.

This is what Bronze Age sheep looked like. They found some of these Bronze Age sheep. I should say at the Bronze Age level of genetic development, on the islands off

the west coast of Scotland where Bronze Age farmers had taken them and finally decided it was just too darn cold to make a living there, gone back and apparently not been able to find all their sheep. And they had no natural enemies on these little islands and so they survived. Some of the islands have Bronze Age sheep and some of the islands have Iron Age sheep. They have taken these sheep back, some specimens -- live specimens of the sheep, to a research station outside of Edinburgh, the Scotch wool board research station, to learn more about their genetics and so forth. But this is the so-called Stone Age sheep. You can see that it molts, which is not true of the modern sheep. It still has a lot of its brownish coloring, some of the sheep are considerably darker than that; they tend to have white underbellies; they are not the light sheep we are accustomed to seeing.

Okay, so this is where sheep were first domesticated in this area and as soon as woolly sheep developed 4000 years or so after they were first domesticated, everybody wanted them. This is the direction in which they went. All the domesticates that were developed in the so-called Fertile Crescent, here, took these routes over to the other peoples in the outlying areas. And so, woolly sheep spread very quickly after they had first been developed, but that development, woolly sheep as I say, seemed to first arrive about 4000 BC.

Now, a word about the looms. This is the horizontal ground loom, which was used in the pink zone, (*gesturing at map*) which was Mesopotamia, the little band, and Egypt.

During the scene of the first representation known in the world of a loom and it is of such a horizontal ground loom hanging next to the ground with two warp bars which are

lashed to those four pegs. And the warp is strung in between. And here is the beginning of the cloth over here. And we have shed and heddle and beater bars stuck into the warp there. In the green zone (*again gesturing at map*) we have the warp-weighted loom, we'll look at that in a moment. These are the two earliest looms that we have evidence of -- this is a Bedouin horizontal ground loom. You can see three of the four pegs with the warp stuck in between. Here's one more beam with the other warp beam there. And the ladies have set up a nice little sun shade. This is an Egyptian model from about 2000 BC showing a similar type of loom. And they're warping on pegs on the wall.

This is the warp-weighted loom, which is what was used in the green zone, the European loom. A picture from 1964 of two Norwegian farmwomen who have set up their warp-weighted loom and are starting to work on it. There is the beginning of the weaving right here and that picture is wonderfully almost identical to this picture from a Greek pot from about the sixth century BC that is in the Metropolitan Museum of Art. There two ladies sit, stand in front, you can see the warp weights there and the beginning of the cloth up here, and notice how tiring it is to weave on this. You have to beat upwards which means that it is quite possible to weave wool efficiently on it. Linen is a little bit iffy because linen is a little bit slippery. And it is totally impossible to weave silk or anything that is really slippery, because I'll tell you it just slides right out.

Here we have the earliest Mesopotamian representation of a horizontal ground loom with a weaver squatting on either side. Here are your two warp bars and the warp in between and the beginnings of the cloth. This is a sort of a bird's eye view of a working stance.

In Mesopotamia about 4000 BC, this is from about 3500BC, we have already got evidence of pattern weaving, simple pattern weaving, which is to say you've got a texture stripe. Here you've got fine weft and then ten rows of thick weft and then a couple dozen rows of fine weft, a little more thick weft, just as it goes off the top edge.

This ax blade, this copper ax blade, had been laid to rest, carefully wrapped in a piece of cloth to preserve it, well, it preserved the cloth. One of the great wonderful ironies.

There is a fold of the cloth here and you can see the thick stripe and then the fine and then the thick again. So, we know they were using texture striping and we hope that those different textures are also in different colors and it would make quite a handsome piece of cloth. Color is not preserved in this case because the molecules of the fibers have been completely replaced by copper oxide -- that is known as a pseudomark and that is what has preserved this piece of cloth, but we can see the structure very, very clearly.

So we know that at 4000 BC they are already into pattern weaving, at least such little things as stripes. About 2600 BC down here in Sumer at the site of Ur, they have dug up in the 1920s a wonderful series of royal burials, which is a reconstruction of all these servants. The queen was buried here. All of these servants, each one had a little cup next to them, they apparently all took poison when given the signal and went to the next world with their queen. And as they uncovered this great array of servants, particularly around these ladies in waiting here, they were able, as they would dig down, they would, for a moment, as they started to uncover particular bodies, they could see the pattern of the cloth and then just that fast it would disintegrate. So there are verbal descriptions of it,

but not even any photographs and apparently there was something of a slight diagonal rib, which may be twill, it may simply be a type of packed weft face. Some of the cloth was bright red and so forth, and so all of it was covered with gold jewelry, bangles, and so forth. So they are by this time, the court at least, has very elegant clothing.

Unfortunately, Egypt is the only place where textiles are well preserved in this whole area and have been consistently preserved and the Egyptians prefer to wear plain white.

Now at about 2400 BC which is only a couple of hundred years after these royal tombs of Ur, we start hearing in the cuneiform tablets down here about some wonderful textiles that are being made at the city of Elba, up here in Syria. And everyone is talking about how beautiful these textiles are and how expensive they are. And the site of Elba was dug up, about 25 years ago, and in the archive notes, which are marked here, they found tablets which recorded the trade of these fantastically expensive and beautiful and colorful textiles.

Now there are only two things, two textile techniques which could account for the relative expensiveness of these textiles. One is that they are pile, knotted pile, and the other is that they are tapestry. Those are the only two things that are labor intensive enough that they could account for the relative cost of these fabrics. Well, we have considerable evidence that pile carpets were being invented at just about that time way over here. And we're talking about way over here. (Shows on map two areas quite far apart.) So it is almost certainly tapestry that we're talking about. We watch pile carpets

spreading from this area and so the best guess we have is that these people have learned how to make tapestry – learned or discovered.

Now, we have another find which is relevant to the origins of tapestry, which is found way up here about the same time, and it is this impression of a rug pattern in the round or around this pit burial. So this is a rather deep pit with a male skeleton here, a little mound here with two giant snake skeletons. Probably a shaman –that’s about the only way one could account for why they would have two giant snakes there. Four wheels at the corners, since they hadn’t invented the spoked wheel yet – is probably 24-2500 BC something like that, And then it was roofed over with timbers and you can see the ends of them here. And then over that one big pile of stones and eventually the timbers rotted out, the stones fell in but over here, you can see that in this corner a rug had been laid out.

Now think about it – okay, this was discovered in the 1930s when this was in Russia.

This is the only publication we have. What kind of weaving is going to leave an impression of a design? Pile carpets aren’t because every knot is the same size generally, so when you go from one color to the next you can’t tell by the feel: I think about the only thing that is going to leave an impression of its design is going to be tapestry where the threads turn back from the edge of the color field. If you dovetail then you’ve got a thicker edge there and if you don’t dovetail you’ve got a thinner edge there. I think that this is about the only thing that is going to give the impression of a design, so possible evidence for tapestry up here circa 2400 BC, highly probable evidence for tapestry down here at 2400 BC.

Now these guys were using the vertical warp-weighted loom; these guys are using the horizontal ground loom. (*Again gesturing at two distant areas on map.*) What about the tapestry loom? Well, that's what this question mark is for. There are a number of shreds of evidence that suggest that the vertical two beam loom, commonly known as the tapestry loom or the rug loom was developed in this general area at the same time that these two looms were being developed elsewhere.

Before we get into that evidence, let me point out this pattern, which is a carpet type pattern on the floor of a palace. It is done in inlaid frit – that's keeping up with the Jones'! That is to say, that is a cheaper way and more durable way to get a nice rug pattern upon your floor than actually buying a rug back in 1800 BC when this was a provincial capital. It is a very typical kind of a rug pattern – just the sort of thing you would see on a kilim or a pile carpet today. You can't tell just by looking at it which of those two techniques it might be imitating. This is dated to about 2600 BC but it's a hoax. But it is so clever a hoax that in the past, for several decades before the hoax was called, none of this stuff has ever turned up again, it is all typical early Bronze Age stuff, it was purported to have been found in western Turkey. It is just the kind of thing you can see that they could have been making but I just wanted to mention; it probably is a hoax. All that survives are these drawings; all that exists are these drawings, which were published in the Illustrated Monthly News.

Okay, now, our evidence – so we've got the site of Ebla which is somewhere around in here and we were looking at the grid floor from Mari which is right there. Ebla is the capital, where we are talking about the expensive fabric coming from. So we know that there is also the rug-making going on here, in fact. About 1300 over here at the Syrian capital we have evidence from cuneiform tablet of two rugs which were delivered to the King. One from a weaver and the other from a knoter. And that suggests that in 1300 BC he's just received a kilim and a pile carpet. Very expensive items, both of them.

Now about 1475 BC we get this representation down here in Egypt at Thebes at the Egyptian capital of a nobleman who very proudly shows us a picture of his town house. And here he is being offered a flower or a cooling drink of something, here's his wife, and here are the servants running up and down the stairs, stumbling on all the supplies, and down in the basement we have some guys who are making string and twine for the estate. The women made the thread, but the men made the string and twine. And two vertical two beamed, upright looms. And you can see the guys are having to sit with their knees apart, in order to get up close enough to it. This one is so wide that it's got two weavers, this is a smaller one, it has got one weaver. And this is under the reign of Thutmoses III. Thutmoses III had pursued his enemies who were constantly getting into Egypt; he had pursued them up through Palestine and into Syria. As he had sacked various places like Megiddo, which is almost certainly linguistically synonymous with Armageddon, he totally destroyed the place all the way down to the ground, hence Armageddon as a vie word for total destruction. He killed off the soldiers but he brought

back the women and children and the craftsmen from the town in order to teach the Egyptians a few new tricks.

Here we see some of their new tricks. This actually has one of the Tutmoses III's throne names on it. It is beautifully done only they haven't a clue as to what they're doing.

Along this edge here and this edge here, you may be able to see these are kind of wiggly edges – they are dovetailing. Then they look at that and they say, “That’s kind of a messy edge, can’t we do better than that?” So up here, they try some slit tapestry and say, “That’s kind of a mess. What do we do?” And they are obviously trying out different techniques. If you notice that it is a very small number of figures on what is basically a white ground. Here we’ll see a close up of that. This is the way it is displayed in the museum now. This has been turned over so you can see the lifts but the warp is running this direction here and is running this direction here.

They are also considerably faded seventy years after they were dug up because they sit in the sunshine every day. As is this piece, these rosettes are pink and green but I can see a tiny bit of green there but it is very hard to see any color left in these.

But these are done -- again, they aren't quite sure what they are doing, so they have put these things in essentially by tapestry but they haven't had the courage to take away the ground weft. So it ends up being something halfway between tapestry and brocading.

They are experimenting with it.

By the time you get to the next generation, there is much higher percentage of figure, this is Thutmoses III's son, Amenhotep II. You can see that they are doing much better; the holes are there because in order to achieve black, this is still linen, and in order to achieve black they've been using tanning but tannin destroys the linen. They are still vacillating between dovetail and slit tapestry presently they choose slit tapestry and then do that for the next 2000 years.

Here you see a bedspread, done by a generation still later, for a nobleman, this is not the pharaoh anymore, and they have avoided the problem. The only place you've got any kind of line that runs in the warp direction is the ends of these four little bars. They have basically avoided having to choose between slit and dovetailing by virtue of the pattern running in this direction instead of running in that direction. The reason for the big blank in the middle is because in that area they have done weft looping and the loops are on the back to give extra insulation to the sleeper.

Here you see another representation, slightly later, of the vertical two-beam loom; there are three of them. There is a woman weaving at one of them, two men at this one, one man at this one, and one man at this one and here is a woman chasing a couple of naughty little boys. The Egyptians are full of humor if you look in the corners. Here is the picture of a vertical two-beam loom; this is the heddling device up here. This is actually being used as a rug loom but the similar type of loom is used still to this day for both pile rugs and tapestry where you need high tension. You can see that they have actually drawn their pattern onto the warp in this case.

We go down another 100 years to the tomb of Tutankhamon where there is a wonderful array of fabrics and you see that now there is no distinction between figures and ground, it is all figures. That is to say there are colors of various sorts as well as the figures themselves, stripes, and all kinds of things. And that is not lousy photography, that is fungus. (*Pointing at a white circular area on the slide.*)

This glove, look at the tapestry on that glove and that is an absolute tour de force of weaving. It is sewn together with tapes at the edges of the glove. So there is a front and back face, it is all done in tapestry and there is a pair of those.

I understand that a series of replicas of the newly rediscovered textiles from Tutankhamon's tomb, that is to say there are a lot of textiles which never published and which was kind of stuck in some boxes and disappeared into the bowels of the museum in Cairo. These have been resurrected and reproduced so as to be able to take a traveling display of them. That is coming to somewhere in the San Diego area this spring. Does anybody know the particulars? I think that the Bowers Museum. Does anybody know? I haven't been able to find out. We all ought to know, because apparently they've done a very good job with it. Nobody? Pardon? It is the Bowers Museum. Does anybody know when it is arriving? I think it's here now. My understanding was it was to come in March or April.

*Participant:*

There is an archaeology China show going to San Francisco from Washington, DC and the Bowers show is now open – sort of Ming Dynasty, Chen Lun pieces.

*(EWB)*

Well, keep your antennae out because it is supposed to come to somewhere around San Diego this spring. I have not been able to find out exactly when or where but it should certainly be worth seeing.

Okay, moving right along. This is what the Egyptians show the Syrians wearing at about 1200 BC. These are tiles; these are tiles that were put on the floor of the king's palace so he could stomp on his enemies with every step. See they all have bowed hands.

But look at these wonderful tapestry friezes of mythical animals and so forth. This one, these happen to be Syrians, one can tell these things by the wrap and cut of the garment and color of skin and type of hairdo and so forth. These happen to be Syrians. This is somebody from the Aegean and he's got what looks like a deer or a goat prancing along there in a field of various little doo dads.

And this is what we find under Greek art, 400 years later, after 400 years of no Greek art at all. I suggest that this is being copied off of a little tapestry type figure, textiles that had survived through the Dark Age of Greece. The Mycenaean kingdom were destroyed about 1200 BC by a bunch of screaming barbarians who were their own cousins, the

[**Norian**] Greeks and it is in the areas where the Mycenaean's survived, that is where they fled to that you get precisely this type of art. It is known as the wild goat style, there are also textile type designs there and this gradually develops into Greek art, the friezes which one sees at the end of the Bronze Age and again at the beginning of classical archaic Greek art. These ladies themselves are shown wearing textiles that are a frieze in exactly the same way as the pottery.

Now this was probably not done in tapestry technique at this point because there was quite a bit of evidence that in the late bronze age as the Greeks, the Mycenaean Greeks began to import tapestries and so forth from the Syrians, they looked at that and said, "Ooh, this is neat, we could do this by our own technique." And their own technique was supplementary weft overshot.

But we do have evidence that in about 480 BC they began to import Syrian weavers, vertical two beam loom and all, to make such tapestries for them in true tapestry technique. And such a garment was given every four years to their goddess Athena. Every year at the local Panathenic festival, the local women gave such a garment with the battle of the gods and the giants woven into it, probably by weft overshot technique. Every four years, the entire city pooled its resources and had one of these professional weavers make a much bigger one that was apparently hung in the Parthenon behind the statue. This is the kind of tradition that was coming down from the Bronze Age, some of it in an imitation technique, others of it in true tapestry.

Tapestry became more and more important -- true tapestry -- in the Greco-Roman world. These are Coptic pieces, of course, done in tapestry technique. Many of these are in museums. By this time, Egyptians were wearing at least this little bit of color on their plain white, and so large quantities of this kind of thing survives.

Now we're going to back up a bit and move over in space, over here to the Altai Mountains where you rug aficionados already know well of the site of Pazyryk with frozen tombs in the Altai Mountains. They were originally burial mounds into which tomb robbers had dug not terribly long after they were built. Here you see a person per scale That made a nice funnel which brought all the rainwater in that then froze into a permanent lens of permafrost and preserved everything that was left in the tomb. In some cases, that permafrost layer device was already filling the tomb by the time the tomb robbers got there so all they were able to rob was the top half of the tomb. And it is in those tombs that we find the most spectacular pieces of cloth.

Here you see the process of excavation, the hollow coffins and so forth. One of these tombs had hanging all around the walls, this kind of fabric, that is to say it was white strips of red woolen twill alternating with strips of scroll pattern tapestry. The robbers had apparently been so enamored of it that they had ripped off what they could above the lens of ice and what was preserved for us was what was in the lower half. These are in the Hermitage. I saw them in Leningrad. You'd have to go to St. Petersburg to see them!

*(Laughter)*

Here is a drawing of that pattern, note it carefully, it is going to come back to haunt us. It has four colors of interlocked hooks making overall a zigzag and alternating with the plain red.

This is another wonderful piece of tapestry from Pazyryk. This is a piece of Iranian tapestry which has been cut up and reassembled to make a Shabrak which is a saddle cloth which goes over a horse's back and shows on either side in matter of great quantities so you can look very elegant as you are galloping across the steppe lands and everybody can see you raided somebody who was particularly wealthy. So here you have these patterns, this is a specifically Iranian religious pattern of some kind of Iranian religious ceremony that is being carried out here and so we are pretty sure that this piece originally was made in Iran.

Okay, so Iran is down here, this stuff was found up here is Pazyryk and now we're going to do down due south into the Tarim basin which is where that very first piece of tapestry I showed you was from and where the area about which my most recent book talks, the Mummies of Ürümchi. Here is a wonderfully colored piece of red and yellow tapestry only it doesn't qualify as tapestry by Ann Hedlund's definition.

I am going to enlarge that definition of tapestry a little bit and say, I am going to call tapestry anything where the weft completely covers the warp and you have the color (is fills in) in the field that particular color fills in that field is discontinuous with the threads of the next color field. This is not in plain weave; this is not over-one, under-one. That's

why I put a picture of this overcoat here because on one of these overcoats we finally figured out what the heck these guys were doing. We nicknamed it “long hop twill”!; normal twill goes over two and under two, getting offset by one with each row so you sort of get a diagonal. They are going over a bunch and under a few and off center by one. And they use, for these overcoats, they used barely spun weft, it’s very fluffy weft and they pack it down and get these incredibly dense overcoats and blankets and such. Now we were dying of heat, it was 110 degrees when we were there but apparently it gets down to about 40 below in the winter. So they needed warm overcoats.

Well, my theory is most of the tapestry stuff we looked at, all the earliest tapestry stuff we looked at from maybe 5-700 BC was done in “long hop twill”, not in plain weave. And so the theory that we came up with, that I came up with, is that they by this time had a few imports of tapestry from the Near East, from Iran wherever, and they looked at that and said like the Greeks, “Ooh, this is neat, I could do that.” and then did it in their own technique. That is to say they had not learned the tradition from another weaver who knew how to do it – they were figuring out how they could get a similar effect using techniques they already knew. And so we have these wonderful tapestries in “long hop twill.”

This is the piece of which you saw another small detail in the opening slide, the wonderful part of tapestry is here, next to the cuff and next to the hem and it is all a single piece and this cording effect is typical of the long hop twill. And from one piece to the next it might be over five, under three and over three, under two or whatever

seemed to be the whim of the weaver or how dense a fabric he or she wanted but it was never over-two, under-two. On the upper surface, the hops were longer than on the backside.

This is also from Cherchen from the southern part of the Tarim basin and I am going to put this next to this one we were just looking at from Pazyryk, 500 miles earlier and probably the same date, and notice that you've got essentially a zigzag pattern. This time the zigzag is going this way. All four colors of hooked done in tapestry and sewn together with a wide band of thread. The two are so similar, they are not identical, but they are so similar in their whole conception that they must be very similar in date and of similar origin. We don't know the origins of either of them.

The stuff from Pazyryk is a big hodge podge, they've got stuff from Iran, stuff locally made—felts, embroideries from China, they've got stuff from everywhere. They clearly went around raiding as many goodies as they could and carrying it all around on horseback so that everyone could see. So we don't know where they got this stuff. They are very fond of it and these people in the Southern Tarim basin have something that is very closely related.

Some other fragments, probably dating to between 500 and 300 BC and here you see some bits of flowers here, and can you see it's a moose? Here's his eye and here's his muzzle and lower jaw, here's his wonderful horns, here's his back, claws, tail. What is sewn on here is plaited fabric. You can, maybe you can see the diagonal there where it

has all been gathered, by I don't know what kind of a hanging device, it's so heavy, I would imagine it's a hanging out of a piece of clothing but this is plaited and we figured on one of them, they must have had something like 190 threads there plaiting them. It boggles the mind. The plaited bands themselves are like a foot wide.

These are two pieces that were dug up very recently; I have not seen them. I stole these pictures from the most recent issue of Connoisseur magazine, which is published in Hong Kong, I believe. And you surely see a centaur, this if from around the turn of the era, and here you see a centaur playing a pipe. And here is the wonderful face of a man, very similar to the face found on a textile from [ULONG BACKOR] way up in Mongolia of just about the same date.

So you can see that by this time, this is probably more like the kind of stuff that we've lost from the Greco-Roman, from the Mediterranean where these kinds of things were not in vogue in Egypt and so had not been preserved for us but they look very much like the kind of thing we see represented, for example, on pottery as what people were wearing and so forth. This very ornate kind of tapestry was probably what we have lost from the classical world.

Question from the audience: Where are these from?

(EWB)

These are from [**Shinjon**], from Chinese Turkestan. I can't tell you off hand the name of the site. Because as I said these were just dug up, these are the first pictures that were published and they are in the most recent issue of Connoisseur magazine, most of which is in Chinese, which I don't read but I can read pictures and I know they were dated to around the turn of the Han dynasty which could be anywhere from 200 BC to 200 AD. Looking at them, I would guess they are probably earlier in that period rather than later. At any rate, that is where I am going to leave you, just where most historians of tapestry start out! Thank you.

*Applause*

Question from audience member:

Could I just ask on the evolution of the sheep, how well determined is that?

*(EWB)*

You mean the point at which they became woolly? Okay, it took us a long time to figure out how we would even be able to figure that out and what we finally came up with or what I finally realized as I looked through the excavation report is that there was a radical change in the age at which the sheep were killed, starting somewhat around 4000 BC. It varies a little bit from one site to the next. But at that point we suddenly see them stop always slaughtering the sheep at a year to a year and a half. Of course, they would have to keep a very small number as a breeding flock, but virtually all of the sheep bones that we find are killed at about a year, a year and a half, and that is what you would do if what

you are trying to get is meat because the animals reach maximum size for the minimum amount of care. Now, at that point we suddenly see them keeping not only the males but also the females to a ripe old age. Now if it was only the females you'd say this was a milk flock. And you want to keep the females lactating so you'd continue to have milk so you'd have a continuous supply of food, but you've also got the males kept to a ripe old age and that comes together with evidence for castration. You cannot blend a bunch of intact males together, they will kill each other and you'll be down to one. But if you castrate the males, you're going to keep as many as you want and they actually provide the best fleece and you can continue to get milk from the lactating females. In fact, we start getting evidence of a dairy industry at about that time. So that, all of a sudden, they shift their whole emphasis from raising the animal to a year, year and a half, kill it, get a pelt and a meal -- to keep the animal alive, cull the wool for a constant supply for clothing and the milk for a constant supply of food. It is a complete shift in how they treat their domesticated animals and that happens at about 4000 BC. And then everybody wants sheep, at that point, I mean it's one heck of a picture! You've got your food and your clothing constantly from these same animals.

Question from audience member:

Do you think they were breeding for the wool or was that just an accident?

*(EWB)*

This is really hard to say, one would have to guess that at first it was accidental and then as they began to get the idea that if you put two really woolly ones together you get an

even woollier one that they probably then pretty quickly hone in on it. But it must have happened at first accidentally. And what is interesting is that with the genetics of the sheep means that the changes that occur naturally with domestication, that is to say you select the more docile animals with shorter jaws so they won't bite and kill each other and so forth, that the genes that you end up selecting just to keep the herd intact happen to sit right next to the genes for hair follicles and hair change in sheep. But not in goats, so goat coats have not changed with domestication but sheep have. Now the goats have shortened their jaws and the ones you end up having still in your pen at the end of the year are the ones who aren't so skittish that they found some way out of the pen come hell or high water. They're not so pugnacious that they killed each other off and they were sufficiently docile enough already that they could breed in captivity. That is what powers the domestication changes among the animals. And the fact that the hair follicle genes were right next to the ones that were being affected by these other things in sheep not in goats explains why it was sheep that became woolly, and not goats.

*Question from audience member:*

I was wondering what you were working on for your next project?

*(EWB)*

Well, right now, under pressure from my family, I am trying to clean up my house.

*(Laughter)* It is in a big shambles after the last few books, and I am also trying to help my father get finished a book that he is working on and my husband get a book that he is

working on finished. And when that's all done, I've got two projects that are kind of waiting for me.

One is on the origin and development of East European folk costumes. In other words, I am shifting from textiles to costumes now in this same arena because most of the central elements in the East European folk costumes go back to either the Bronze Age or the Stone Age. And the other one has to do with the genesis of man—that's another project.

*Applause*