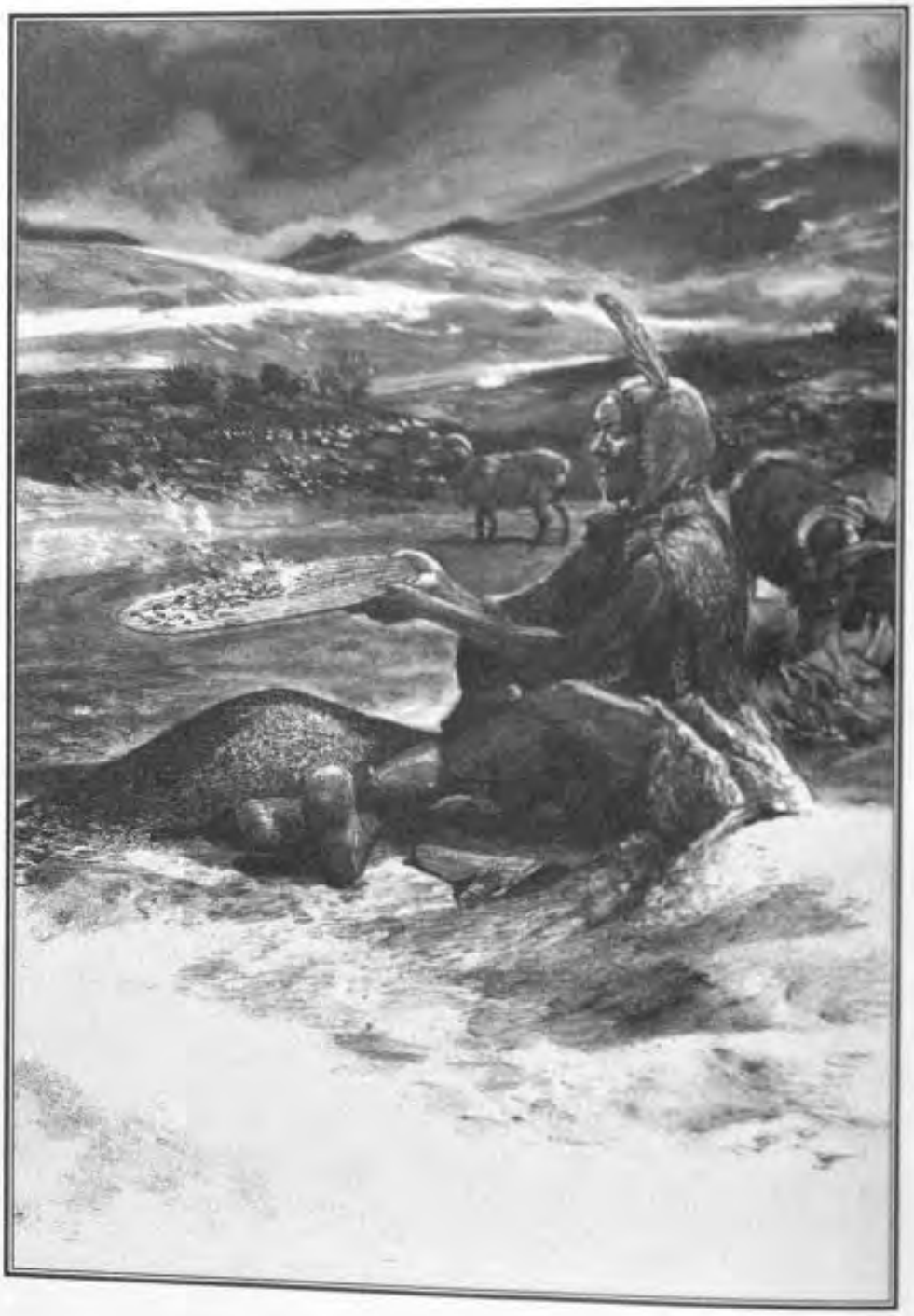


The Loulan Beauty
Illustration by Kelvin Wilson 1997

The MUMMIES *of* ÜRÜMCHI

Elizabeth Wayland Barber

W. W. Norton & Company

New York • London

CHINA
Beijing
MONGOLIA
Hami
Loulan
Urumchi
Cherchen
TARIM BASIN
TIBET
MESOPOTAMIA
EGYPT
Athens
Roma
A.E.P.S.

MAP 1.1

1

Mystery Mummies

"Calf-length A-line dresses with contrastive piping lead the ladies' fashions, in this year of the great burial. While red and blue with dashes of turmeric yellow continue to dominate the color palette, the stunning effect of bright red trim on maroon suits along with striped leggings remains popular among the gentlemen. . . ."

SO MIGHT the fashion page of the *Tarim Times* have read, around 1000 B.C., if anyone in the Tarim Basin of Central Asia (map 1.1) had known how to read or write. The story, however, had to wait three thousand years, till Easter of A.D. 1994.

In April of that year *Discover Magazine* published a cover article laying out picture after spectacular picture of ancient mummies clothed in vivid hues of red, yellow, and blue: colorfully swaddled babies, a bearded man clad in maroon shirt and pants with white boots over polychrome leggings, women with high-peaked "witches' hats" and death grins to match. It looked more like Halloween than Easter.

This was the first dazzling notice afforded most Westerners that well-

Opposite page: Map of Eurasia showing the location of the Uyghur Autonomous Region, the westernmost province administered by China, north of Tibet and southwest of Mongolia. The mummies are now housed in the regional capital, Ürümchi, but were found in and around the Tarim Basin, principally near Hami, Loulan, and Cherchen.

preserved mummies existed along the ancient caravan route through the heart of Asia at a time contemporary with the much more famous Egyptian mummies. When the earliest of these Central Asian corpses nestled into the sands of the Tarim Basin, about 2000 B.C. or a little after, the pyramids of Egypt had already stood for half a millennium, but the best-known pharaohs, Ramesses II and "King Tut" (Tutankhamon), were rather more than five hundred years into the future. Next door in Mesopotamia, the Sumerians—first inventors of the art of writing—were already dying out and Hammurabi was soon to set up his famous law code; the Greeks and Romans had not yet even arrived in Greece and Italy from the northeast. On the other hand, "Ice Man," the Late Stone Age body found in 1991 by hikers in the Alps, had died well over a thousand years before. Europe and the Near East were living in the Bronze Age, a period characterized by the use of soft metals. To the east the Chinese had not yet learned to use metal but were already busy domesticating the precious silkworm that would one day lend its name to the most famous caravan route of Inner Asia, the Silk Road, along whose stretches the mummies have been found.

The colorful clothes and appealing faces of these Central Asian mummies produced an immediate response in America: people wanted to know and see more. Exactly one year after the *Discover* article featuring Jeffery Newbury's colorful photographs, *Archaeology* printed its own cover story on the "mystery mummies," and soon photographers and textile buffs were trekking out to a city their travel agents had never heard of: Ürümchi, current home of the mummies. A year later, in March 1996, *National Geographic* joined the caravan. Meanwhile, in the fall of 1995, *Scientific American Frontiers* had aired about ten minutes of Asian mummy footage on TV, the culmination of a one-hour program on Alan Alda's adventures in China.

No one who has made the arduous trip to the remote Chinese-administered Uyghur Autonomous Region, where the mummies are coming to light, would wonder that Alda himself did not go there, sending only his film crew to its capital city of Ürümchi, some sixteen hundred miles west of Beijing. The flight of sixteen hundred miles is not quite so far as jetting to Hawaii from Los Angeles, but it feels farther: flights are few and a lot more hazardous, thanks in part to killer windstorms that frequently shut down the few Central Asian airports. Flying from Beijing, one sees the countryside below soon shifting from the lush green of northern China to orange mountainous deserts as far as the eye can see, which is a long way at thirty thousand feet. An artist with only ocher and burnt umber left in his paintbox might create such a scene. In color and terrain as well as vast extent, it reminds an American of the high red deserts of Utah and Arizona and of the Great Basin in Nevada with its dry rocky crags protruding above a deep, choking porridge of sandy-looking fill. Foreigners tend to be un-

aware that most of the huge territory that China governs is not fit for agriculture, being either mountain or desert or both at once.

The editors of *Archaeology* had commissioned their article from someone who had traveled to the Uyghur region several times, Dr. Victor Mair, a professor of Chinese studies at the University of Pennsylvania. Mair had first seen the mummies in 1987 while guiding a group of diehard travelers through the Ürümchi Museum—the sort of people not daunted by mere dust- and gravelstorms. At that time the bodies lay in oblivion in a room so ill lit that well-equipped visitors would pull out their pocket flashlights to get a better view.

What Professor Mair recognized there stunned him. The mummies appeared to be neither Chinese nor Mongoloid in facial type; they looked, in fact, distinctively "Caucasian," with high-bridged noses, deep, round eye sockets, fair hair, and—on the men—heavy beards. According to Chinese historical documents, the Han Chinese themselves began to move into Central Asia only around 120 B.C., struggling to open up regular trade with the West. So historians would not particularly expect Chinese mummies in Central Asia in the second millennium B.C. But why not Mongoloid? Archaeologists and linguists alike had assumed that the Mongol-type peoples had "always" inhabited this entire area, ever since the spread of *Homo sapiens sapiens* around the globe at the end of the Ice Age forty thousand years ago. They also assumed central and northern Asia to be the general homeland of the Altaic linguistic group, which today includes Mongol and the various Turkic and Tungusic languages (see fig. 9.7). (Northern Central Asia was of course the heartland from which emanated the great invasions of Turks and Mongols during our own millennium; see map 9.9.) To find Caucasians was a surprise.

Returning home, Mair could not forget those strange mummies moldering in the galleries and storerooms in Ürümchi. On the immediate level, something needed to be done to help the museum protect its priceless archaeological treasure from the depredations of fungi, vermin, and microbes. Once people have removed such mummies from the ultradry desert sands that preserve them so splendidly, any dampness at all, even that exhaled by the live human beings now working around the bodies, inevitably restarts the processes of decomposition and decay. And to a family of moths, a well-preserved mummy constitutes an edible palace, as tasty to them as the witch's hut to Hansel and Gretel. The museum sorely needed stout Plexiglas cases in which to seal the mummies with a cargo of disinfectants and bug killers, set up so that scholars and other members of the public might still see and study these important finds.

But Mair also recognized that the very existence of the mummies and the history they represented would revolutionize academic thinking in a number of fields. To tease out of these now-silent witnesses the stories of their lifestyles,


Ürümchi
NAN SHAN
TIEN SHAN
Kaidu River
Tarim River
Loulan
Cherchen River
Cherchen
T U N

MAP 2.1


Zaghunluq
KUNLUN

2

A Man with Ten Hats

THE MUMMIES in the upstairs gallery of the Ürümchi Museum tax one's powers of description, so close to alive do they appear in death. They lie single file down the middle of a long, narrow chamber, arranged toe to head from oldest to most recent. Cherchen (or Chärchän), on the southern rim of the Silk Road (map 2.1), has without doubt produced the most spectacular Tarim mummies so far, and of these the most famous is the three-thousand-year-old man who occupies the gallery's dusky center (plate 1).[1]

His face is at rest, eyes closed and sunken, lips slightly parted; his hands lie in his lap, while his knees and head are tilted up—like a man who has just drifted off to sleep in his hammock. Visitors tend to tiptoe and lower their voices. A two-inch beard covers his face, and his light brown hair has been twisted—plied from two strands, not braided from three—into two queues that hang halfway down his chest. Here and there white hairs glint among the yellow-brown, betraying his age—somewhere past fifty. He would have been an

[1] Future visitors to Ürümchi, I am told, will find the mummies in a new gallery, differently arranged. I have chosen to leave my descriptions as I and many others saw them and as they were when the photographs and research were done.

Opposite page: Map of Tarim Basin, showing Cherchen and its ancient cemetery at Zaghunluq, with major rivers and surrounding mountains. Central area is the exceedingly dry Taklamakan Desert.

FIGURE 2.2

Face of the male mummy found at Cherchen ("Cherchen Man"), from ca. 1000 B.C., with bright yellow-ocher face paint and a red strap to hold the jaw shut. Note the heavy beard, round eye sockets, and high-bridged nose characteristic of Caucasians. (Photo I. Good.)

imposing figure in life, for he once stood six feet six inches tall (almost exactly two meters).

Bright ocher-yellow face paint curls across his temple, sprouting short rays on its outer curve and reversing its curl as it meanders down to the flatland of his cheek before climbing across the great ridge of his nose—not a low-bridged Asian nose but a veritable Sierra Nevada of a nose—to the far side (fig. 2.2). Did such markings denote rank, affiliations, piety? Did well-wishers apply it to help him during his last hours, or after his death? The finds in the tomb included "two small bone spoons with dried ocher pigment," according to Dolkun Kamberi, one of the excavators, suggesting to him that the makeup formed part of the funeral ritual. Caking of the paint around the "laugh lines" at the outer corners of his eyes, on the other hand, suggests that the man could still squinch up his face when the color was put on.

"Cherchen Man" (so the press dubbed him) also wears earrings, of a sort: a bit of bright red woolen yarn passes through each earlobe. If the thread once supported a further ornament, it is long gone.

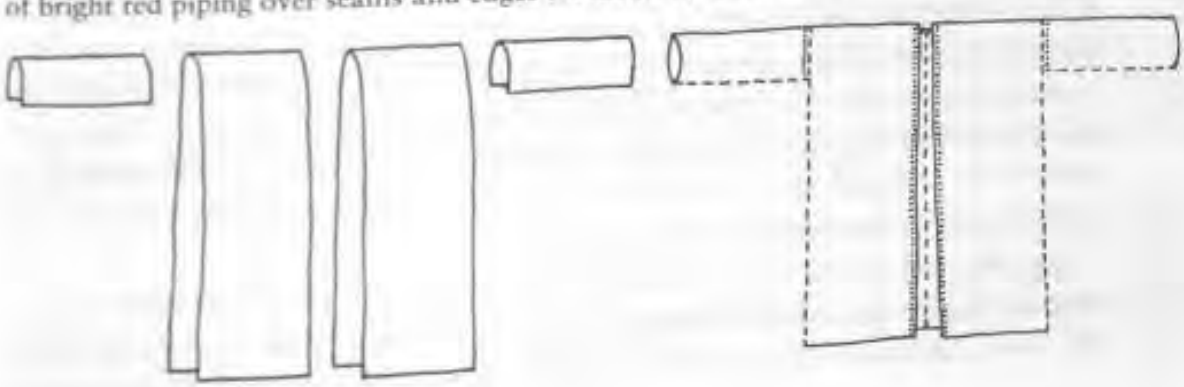
Passing from the face, one's eye jumps between the violently colored leggings and the purply-red-brown two-piece suit that covers most of the man's body. Originally the man wore soft white deerskin boots to above his knees—the left

one is still there. But the right one has torn away, revealing horizontal stripes of gaudy red, yellow, and blue that put Ronald McDonald in the shade. Knitted socks, however, had not been invented yet. This man had simply wound colored hanks of combed wool around his legs and feet, to pad them and insulate against frost, much as East European peasants still do. Insulation was welcome. Untempered by the great oceans, the weather in this basin at the center of earth's largest continent swings from unbearable summer heat to icy winter cold. Where visible, the wool has been pressed together so lightly that one can hardly call it felt, although constant rubbing inside the boots would gradually compact it into a solid material. That's all that felt consists of, sheep's wool rubbed together in a preferably warm and damp environment until the fibers are inextricably tangled. Perhaps this was how felt was first invented. (The English last name *Walker* actually means "felter" because the verb *walk* originally denoted the act of compressing wool into felt by stomping on it in a tub or stream.)

And his suit? Shirt and trousers, one would say at a glance. But the exact design of the trousers cannot be discerned because of the covering shirttails. The shirt, for its part, follows a pattern well known among folk cultures, where so much effort goes into making the cloth itself that none is wasted (fig. 2.3). Two long woven rectangles, just as they come from the loom, form the body of the shirt, one draped over each shoulder to form the two halves. Two more square swatches, sewn into tubes and attached at right angles to the first part, compose the sleeves. They will stick straight out, of course: the original "T"-shirt, with none of the gentle fitting that slants the sleeves of our modern tee-shirts into a comfortable downward angle. But simple weaving produces rectangular cloth, and any angling or sculpting wastes some of it.

FIGURE 2.3

Construction of Cherchen Man's shirt from 4 narrow lengths of cloth (left) sewn together (right). At right, the location of the seams is indicated by dashed lines and the placement of bright red piping over seams and edges indicated by dotted lines.



All the stranger, then, that part of the front right shirttail has been rudely but squarely torn away, so that it is considerably shorter now than its mate on the left, with a raw bottom edge. Display conditions make it impossible to discover how this problem resolves itself in the back.

Why should this otherwise elegantly dressed gentleman have his shirt so rudely torn? Pondering the possible scenarios reminded me of another ill-used woolen garment of similar date, three thousand years ago, found in a Swedish peat bog. That cloak of plaid twill had half a dozen dagger holes straight through its double folds. Brigands? Treacherous companions? Ritual killing? At any rate, mysterious violence worthy of the evening news. But with Cherchen Man the body itself shows no sign of foul play. Conceivably the rip occurred during excavation and the sundered piece never got reunited with the shirt. Among materials from the storeroom, we later saw several swatches of cloth of the same color, weight, and simple weave—the so-called plain weave, in which each thread goes alternately over and under those at right angles to it.

Most of us just grab an outfit from the closet each day, having bought the pieces ready-made from a rack or catalog. We scrutinize fashion but have never seen anyone weave, let alone make thread. We take our textiles for granted. It means nothing for me to say that your best shirt is probably plain weave and your blue jeans twill. But until the Industrial Revolution everyone knew a lot about cloth because every day in the home people worked at making thread and cloth from scratch and everyone saw the processes. Making cloth and clothing soaked up more than half the human labor hours in most preindustrial societies, more even than food production.

Although the looms used today in factories may be quite complicated, the basic process is simple. Imagine yourself prowling the grass as a wolf spider, which always trails a silken thread generated from her spinnerets (so that if she falls or gets blown off her feet, she has an anchoring safety cord). Now imagine yourself trying to make your way, thread and all, through a row of parallel grass stems felled yesterday by your landlord's giant lawn mower. Paying out silk, you climb over the first stem, then squeeze under the second, hop over the third, under the fourth, and so on in alternation. No bugs over there; you turn and come back along a parallel path. But this time you duck under the stem that you clambered over just before turning around; then you climb over the next, push under the third, and so forth till you get back to the blade you started from. Still no dinner: you turn around again, hopping over stem 1, under stem 2, etc., always alternating over and under.

As you keep laying your silk down in this manner, you are creating a plain-weave "cloth" (fig. 2.4). The long grass blades lying parallel on the lawn form the *warp*, the threads that are normally fixed in place on the loom. Your trail-

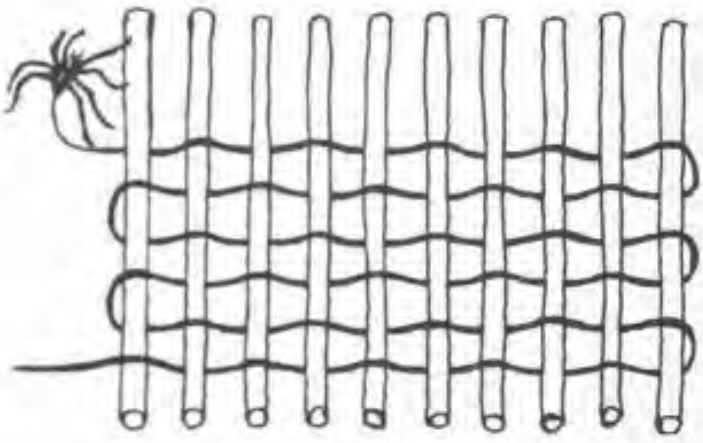


FIGURE 2.4

Diagram of the simplest kind of weave, *plain weave*, and the way that the weft normally closes the sides of the cloth (the *selvedges*) so that nothing unravels.

ing thread of silk, which interlaces with them as you hop and duck, forms the *weft*, literally "that which was woven" (from an old past tense of the verb *weave*[2]). Warp and weft: these are the two sets of threads that interlace and bind together to make a woven cloth. When the spider pulls her silken weft alternately over and under the single stems of warp, it makes the simplest of all weaves, *plain weave*. Moreover, each time the spider turns back, looping her silk around the last stem by shifting from "over" to "under" as she turns, the silken weft binds the last stem of the warp into the fabric so it can't ravel out. The neatly bound edge of the cloth formed by many repeats of this behavior is called a *selvedge* (from *self-edge*). Other weaves are possible—other combinations of how the spider pulls her silk over and under the grass blades, to form, for example, twill or satin weaves. But these are the essentials.

As with so many things associated with the mummies of Ürümchi, apparent simplicity hides much cleverness. By way of decoration on the plain-weave fabric, the tailor of Cherchen Man's suit whipped bright red yarn as a sort of piping over the seams on both the shirt body and trouser legs and around the neck and front opening of the shirt. It produces a very subtle but effective ornamentation—subtle both because the piping is so fine and because its bright red color rests against the purply-red-brown background.

If that's what one should call such a hue. Plum? Maroon? Cherrywood? This strange but attractive shade so widely used in cloth from Cherchen must have been the favorite color either of the man's social group or of his family's

[2] Like *leave, left*. Another word for the weft, not used much now by weavers in America, is *woof*, also derived from *weave*.

weavers. Many other cloths from this tomb bore the same distinctive color. I can compare it only to the peculiar tint obtained by a brunette who hennas her hair (as common a practice among current Uyghur women as among New Yorkers): brownish in this light, reddish in that, with a glint of beet-purple highlights. The source of such a textile dye continued to baffle me as long as I worked only in the mummy gallery.

Holding the man's shirtfront together is a waist cord plaited from yarns of five different colors: bright red, dark purply-red-brown, blue, green, and yellow (plate 2a). The threads show none of the angled structure we associate with three-strand braiding, the form of plaiting best known in our culture. Instead each emerging thread dives straight back into the perfectly round cord like a little stitch, reemerging farther over so that its color spirals slowly around and along the cord. I've done a lot of weaving and sewing but very little plaiting, so I was puzzled at how such a cord might have been made. Only later did I determine the surprising answer.

Meanwhile, Cherchen Man gave us other enigmas to ponder. Over the middle finger of his left hand he wore a white leather thong, made from a narrow loop passed through and sewn to a wider piece carefully trimmed to have an oval end. People who had nothing else to do in the gallery stood around endlessly discussing what its purpose might be. I nicknamed it Special Tool No. 893. As with the little hexagonal rod you need to unstick your garbage disposal, you'd never know its special function until you needed it or saw it used—that is, saw it in context. And we no longer have the context for this odd thing. It might have had to do with archery. My favorite hypothesis was that it once served as a tether for the man's pet hunting falcon—a pleasingly romantic notion unfortunately not yet supported by evidence, although falconry seems to have begun in Central Asia by at least the early first millennium B.C. and is still widely practiced there today.

Two items in Cherchen Man's apparel he clearly wore only in death. First, a red and blue cord tied around his wrists kept his hands from sliding off his chest, where they had been carefully posed. Similar cords bound other mummies found in the same tomb group, suggesting that the color scheme or the type of cord might have some sort of ritual significance. These ties were formed by drawing out virtually unspun combed wool into long, thin sausages, one of red and one of blue, and then twisting them around each other to form the bicolored cord. In thickness and fluffiness it resembles the bright yarns popular now for wrapping gifts.

Second, he wears a solid strap, plaited of dark red wool, that passes under his chin and around behind his head where it is tied tightly in a knot. This strap served to hold his jaw shut as the forces of decay set in, swelling the tissues. (De-

FIGURE 2.5

Top of Cherchen Man's head. The crease left by pressure from the woolen jaw strap can be seen on the scalp just above the strap.

composition can cause such bloating that even close relatives cannot identify the corpse.) It succeeded fairly well in its task, for the man's mouth came open only slightly. But the pressure was so great for a while that the strap dug into the back of the man's head where the knot is, leaving a permanent crease in the mummified scalp. Then, as the corpse dried out, the pressure subsided and the slackened strap slid down slightly in back, so that the long crease can be seen just above the strap near the knot (fig. 2.5). This two-phase process of mummification tells us more about when the man's face paint could have been applied. For if the color were put on after death, the postmortem *bloating* could squinch up the laugh lines and push the ocher paint out. Eventually the desiccation shrank back the flesh so that we can see into the empty creases again.

Most of us don't spend much time rooting about in the details of death and decomposition, so we remain unaware of the grisly events that commonly attend them. We inter, embalm, and cremate for good reasons: either to prevent these ghastly changes or to put them safely out of sight, smell, and hearing. When we chance, then, to encounter directly the effects of death, we have two

reactions. Horror is one. Edvard Munch painted his famous canvas entitled *The Scream* after seeing some mummies. If bodies that mummify have *not* had their jaws tied securely shut, they display distortedly yawning mouths of just the shape captured in Munch's picture. Experts in archaeological burials call it the mummy gape (see, for instance, plate 3a).

Second, we misconstrue much of what we see. Vampire lore, for instance, grew out of misunderstandings of quite normal events associated with body decomposition. When frightened peasants dug up the dead in a search for "vampires," the body often looked plumper than before burial, and it now had blood at the lips. So the diggers would conclude that the dead person had been sucking blood from the living. A reasonable enough deduction, perhaps, if that's all you know. But in fact the gases produced during decomposition normally bloat a dead body for a while (unless it is quick-frozen like Ice Man), and the pressure this bloating exerts on the blood-rich lungs forces blood out the nearest opening, the mouth. We need no vampires. The only things alive here are the hungry microorganisms, not the bodies.

To understand certain aspects of the Asian mummies, we need to delve into details of death and decay here and there. But I will leave the curious reader with a strong stomach to learn more about the subject from the lively book *Vampires, Burial, and Death*, written by another expedition member, Paul Barber.

Paul's inclusion added expertise in interpreting several aspects of the burials themselves, including but not confined to such matters as chin straps and laugh lines. There were many questions. How came it that these bodies should be so perfectly preserved after three thousand years in the ground? Did mummification result entirely from natural conditions, or had the survivors helped the process along by artifice? One would like to add "like the Egyptians" since the Egyptians poured all sorts of fancy unguents onto the heads and torsos of their mummies to help them into the next world. Ironically, far from preserving the corpses, those liquids merely sped up the decay, so that on most Egyptian mummies only the feet remain fully intact. Some of the Tarim mummies are far better preserved than anything from Egypt in the time of the pharaohs.

At the far end of the gallery that displayed Cherchen Man and his companions was a glassed-in workroom we nicknamed The Morgue because it contained two tables laden with bodies—those under conservation. When not being worked on, these mummies lay discreetly draped with burgundy velvet coverlets. Only their bony feet stuck out at one end. A couple of large, oblong, coffin-like cases of wood contained yet more mummies in from the field, awaiting their turn on the slab. We learned to wear dust masks in that room, to keep the particles of ancient detritus and some of the faintly acrid yet sickly sweet smell out of our noses and lungs.

The Morgue also had a live occupant, a delightful and very knowledgeable young Chinese woman named Tian Lin, whose business included cleaning the mummies that came in from the excavations. Tian Lin had conserved Cherchen Man and still tended his needs, regularly changing the chemicals inside his new Plexiglas tomb and checking his body and clothes for any sign of trouble whenever the container was opened for high-paying foreign photographers.

Opening mummy cases—a process we saw twice—was no easy matter. Some of the new Plexiglas tops, which allow visitors to see the bodies clearly while affording considerable protection to both the viewer and the viewed, weigh an enormous amount. In fact it required practically all the men working in the museum to lift Cherchen Man's huge cover, shaped like an inverted box, high enough to clear the corpse (which lies on a waist-high bier), then to move the cover sideways and lay it gently onto the floor—and then back again a few minutes later. During the brief time that each case was open, Tian Lin would don a surgical mask and quickly inspect the condition of her charge, tweezers in one hand to pull back the folds of cloth gently for a better view and a small vial in the other to receive the corpses—or larvae—of any predatory insects that had somehow found their way into the case. At the last moment she would break and deposit a small vial of poison beside the body, while the men struggled to replace the unwieldy cover and seal it before anyone was overcome by the fumes intended for the bugs and fungi.

During the course of initial conservation, Tian Lin said, each of the better-preserved mummies had all its clothes carefully removed, so that the body could be cleansed of dirt from the grave and of any mold or fungus that might be setting up business anew. The clothes too were cleaned up. Then the body was dressed again to be put on display.

In the process of disrobing and cleaning the mummies, Tian Lin had made an interesting discovery. A few bodies—the ones best preserved—turned out to be covered with a strange yellow fuzz or dust that lay under the clothes, directly on the skin. Whoever had prepared the burial in ancient times had clearly painted the dead person with some substance that promoted mummification. Only after this anointment had the body been dressed and laid to rest. In its original state the "paint" had probably been a frothy goo, like whipped egg white, which upon drying and aging had turned to light dust. The earliest Tarim mummies—those from close to 2000 B.C. found around Loulan (Chapter 4)—had none of this substance. Their preservation resulted entirely from desiccation by the dry climate. But Cherchen Man and some of his companions, a thousand years later, had had some help.

Curious as to the composition of the mysterious substance, Tian Lian had scraped some off and subjected it to a series of laboratory tests. (She had re-

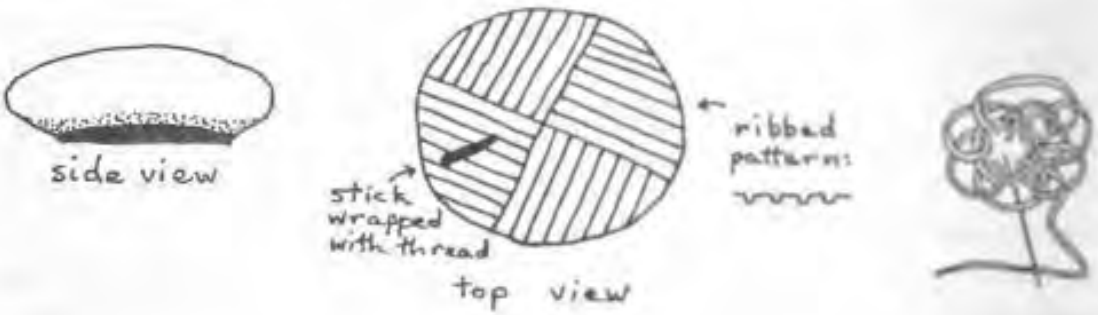


FIGURE 2.6

A beret-shaped hat constructed in *nalbinding* technique from dark red-brown woolen yarn, worked in a pattern of ribbed quadrants. *Nalbinding* uses a threaded needle (unlike knitting) to make loops interlocking with the previous row of loops (right), in an ever-increasing spiral starting from a little circle in the center.

ceived thorough training in medical chemistry in Shanghai before becoming conservator for the museum in Ürümchi.) Tests indicated it was some sort of animal protein, but she could get no further. She was intrigued to learn from Paul that mummies found in the high, dry Andes Mountains of Peru often had their skins painted with a thin fish paste, another animal protein that also apparently promotes preservation.

In all these locations, however—the Andes, Cherchen, Loulan—the extreme dryness of the climate would at least partially mummify any dead body that didn't get eaten by predators first. The same conditions also account for the splendid condition of so many textiles, color and all.

Far more cloth and clothing survive than just what the mummies wore. These grave gifts fill several cases in the museum's public gallery and countless storeroom shelves to boot. Since museum personnel had excavated the Cherchen tombs, the artifacts were kept at the museum and remained under its control. After short negotiations the staff began to bring textiles by the armload up to a small workroom where Irene and I could study them in detail (plate 5b).

The bright colors had amazed and delighted us already in the gallery, but the feel of the textiles in the study room astounded us even more. Still so supple. It was like handling fabrics from one or two hundred years ago, and yet someone had woven them three thousand years back, according to the radiocarbon dating of the tomb. What had caused such wonderful preservation?

We soon learned that the people of Cherchen had dug their graves into a geological formation of salt beds. That choice had probably been dictated partly by the fact that crops would not grow in salt, so using this space for burials would entail no loss of productive land. Furthermore, the salt, like dry heat, would suck the moisture out of the bodies and discourage microorganisms—an ideal cemetery for rapid mummification. But salt also brightens certain dye col-

ors: it is sometimes used even today to intensify them during the manufacture of cloth and yarn.

The Cherchen people had such a fondness for clothes that they took piles of apparel with them to the next world. This single excavation, for example, produced ten hats, each different. One hat (fig. 2.6) had the shape of a beret or tam-o'-shanter, made of dark brown wool in a looped technique that at first glance looks like knitting. But knitting, so far as we know, was not invented for another two thousand years. This hat used a needle and thread method known by the Scandinavian name of *nalbinding* ("needle binding"). The skilled maker not only increased the circle to the maximum width of the hat, then decreased the diameter again to fit snugly over the brow, but even managed to work a simple but elegant ribbed pattern at the same time. A slim stick, wrapped in places with fine thread, remains thrust into one quadrant of the cap, apparently the remnant of an ornament or hatpin.

Another cap, minutely knotted of red-flecked brown wool, looks like a tiny circus tent (fig. 2.7 left). From the pointed tip, its four sides slope down and then out with a cushiony bulge toward the bottom. A third headpiece was molded from two sheets of white felt into a simple helmet shape, then decorated in front with a curving roll of felt that looks remarkably like a pair of horns (fig. 2.7 right).

The largest and most arresting hat, also plumed, looks like something that might have belonged to Robin Hood (fig. 2.8 left). The dark brown felt of its body curves up to a high, rounded peak at the top and flips over at the bottom to form a small cuff around the wearer's face. Around the edge of the cuff, thick but neat buttonhole stitching in light tan contrasts decoratively with the dark felt; similar tan stitchery continues up the center front and down the back, holding the two halves of the hat together. Partway down on one side, several big feathers were once attached.

Hats of this shape are well known in ancient Near Eastern and Mediterranean art, where they were copied from the headgear of Phrygian archers (fig.

FIGURE 2.7

Two of the hats found at Cherchen, ca. 1000 B.C. *Left:* A tent-shaped cap of red-flecked brown wool. *Right:* A helmet-shaped hat of white woolen felt, decorated with 2 horn-like rolls of white felt.

of greatly varying width, has in fact formed a vital connector between Orient and Occident for millennia—ever since a few of its inhabitants got the idea of domestic animals from the Near East in the late Neolithic (around 4000 B.C.), along with a starter set of already tame sheep and cattle. As long as the grass grows well, it is far easier to herd hay-munching ruminants than to grub out the tough-rooted grass to make room for fields and then go through the endless heavy work of plowing, planting, weeding, watering, harvesting, and processing the crops. Farming is an exhausting life, herding much easier—lazier, even—especially when one can control a herd from on horseback. The steppe people themselves domesticated horses, evidently as soon as they got the concept from farther south that domestication was a possibility. A horse skull from the Ukrainian site of Dereivka, dated to about 4000 B.C., shows characteristic tooth wear that suggests the horse had chomped on a bit for several hundred hours during its life; it was not only domesticated but closely controlled. The effect of using horses to manage the other animals was tremendous, since the horse riders could move so much faster than the herds (let alone humans on foot) and thus govern such large flocks that people had no need of other forms of livelihood. The change created a completely new lifestyle that still persists in parts of Central Asia. And the life of herding is preferred. Only those who lose their flocks will farm, and they will do so only until they can build up enough capital to start a new herd. (In similar fashion, when the Native Americans of the Great Plains got horses from the Europeans, they quit farming and rode off across the prairies, the New World "steppes," to a new and more energy-efficient way of life.)

But when, as periodically happens, drought hits and the vast grassy stretches dry up, then the great herds starve and die off, and some of the humans who depend on them for food must die or change their ways temporarily. More often than not, afflicted Eurasian nomads have chosen to move, moving in particular into the greener fields of the nearest farmers—usually the Europeans or the Chinese—who, like the proverbial ants, regularly and industriously stored up grain against an uncertain future. Some such hiccup in the weather and grazing patterns may have led to the migrations that destroyed the Hittite Empire and flung the peak-hatted Phrygians into Anatolia. We will see this same pulsing rhythm of periodic migrations out of the steppes many times in seeking to understand the cultures of the Tarim Basin. Since the dawn of nomadism, perturbation anywhere on the steppe seems to have sent ripples of upheaval across the grasslands from one end to the other—from Hungary to China and back again.

A host of inventions in cloth and clothing that we take for granted have come out of this nomad culture—felt, for instance, such as that used in several of the Cherchen hats. Being merely matted sheep's wool, felt requires no loom.

Its manufacture therefore does not oblige the nomad to stay in one place. (Some nomadic groups do set up camp for several months at a time and do weave, but it takes considerable time to set up a loom and produce a piece of cloth on it.)

To make felt as a nomad does, you scatter cleaned and fluffed-up wool all over a mat in an even layer, sprinkle the wool with whey or hot water, roll up the mat with the damp wool in it, and tie the bundle to the back of your horse so as to mash and knead it as you ride all day. At night you unroll it, sprinkle it down again, reroll it the other way, and tie it to the horse for another day's punishment. Soon the wool has matted as thoroughly as you please. You can even decorate it by placing tufts of colored wool (or bits of colored felt) in a pattern on the top layer, then mash it some more. The whey and the hot water cause the tiny scales on the surface of the wool fibers to stick up rather than lie down, promoting the tangling that mats the fibers. As such they have the opposite effect from the "conditioners" that many women today put on their hair to decrease tangles. Sheep's wool is virtually the only natural fiber that will tangle so inextricably.

Nomads use felt not just for its convenience of manufacture. More important, it can be made so dense as to be nearly impervious to wind and water, yet it is far lighter than other waterproof materials like wood and metal. The herders spread great sheets of felt over light frameworks to produce their famous round tents, or *yurts* (fig. 2.10), and they use it for flooring (as rugs), bedding, luggage, saddle gear, hats, cloaks, and other clothing. They even use it to make dishes for solid foods and padded carrying cases for the china cups used for drink. Along with horse riding, felt has made the Eurasian nomadic way of life possible.

Zipping around on horses also affected nomadic clothing. Loosely flapping drapery like that of the ancient Greeks won't keep you warm on an icy winter steppe. You need garments that stay put around your body, closely fitted apparel with legs and sleeves. Many have suggested that the horse riders invented trousers, for pants seem to come into the well-documented areas of the ancient world with the steppe migrations of horse riders at the beginning of the Iron Age. Pants not only keep the legs warm, they can also minimize chafing while riding. Many cultures just beyond the steppe zone took up trousers at about this time, probably copying them from the invaders. And we know that the people of the Tarim Basin knew horses and riding by 1000 B.C., for they placed a leather saddle and the head and front hoof of a horse into the upper part of Cherchen Man's tomb (for layout, see figs. 2.14, 3.1). The peculiar thong on his finger might thus have belonged to horse-riding gear.

Cherchen Man's pants were not in a position to be studied. But another pair of trousers in the same sort of purply-red-brown woolen material turned up in the excavations at Cherchen (fig. 2.11). Between the pant legs, a square gusset

FIGURE 2.10

Kazakh shepherd family setting up their yurt, a movable felt house, in the mountain pastures of Nan Shan (Southern Mountains) south of Ürümchi, in June 1995. First they lashed together the wooden framework, consisting of curved struts for the roof, lattices for the walls (discernible inside, through the open door), and a rigid doorframe with solid, hinged wooden doors (the left one is visible). Then they tied mats to the outside of the lattice walls. Next, starting to the left of the doorway, they began raising and tying into place the great sheets of felt that cover the matting on the outside and make the tent windproof. The family is just finishing that process to the right. Then they will cover the roof with another huge sheet of felt, still lying bundled on the grass in the foreground, leaving only a smoke hole open at the top center. Finally the woman will cover the lattice inside with brightly colored felt rugs, lay more rugs on the ground for flooring, and move in the household goods, which also still lie bundled on the grass at left. The most important piece of furniture, the wooden bedstead, waits at the right of the yurt. The whole process of raising the yurt takes about an hour.

was set cornerways in the crotch to give ample room for sitting with legs spread. (Problems of splitting one's seams in tight areas like this have led to the expression *bust a gusset.*) As a decorative touch, the tailor used a thick pale red yarn for the visible stitching; the dashed line of its course resembles the bright lane divider on a dark highway.

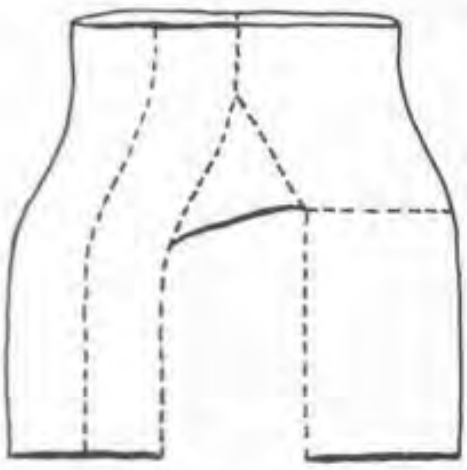


FIGURE 2.11

Pattern of purply-red-brown woolen pants from Cherchen, ca. 1000 B.C. Dashed lines indicate the positions of seams. The asymmetrically diamond-shaped gusset at the crotch was folded on the bias to give the cloth extra elasticity for freer movement.

No one knows when and where sleeves were first invented; people may well have thought them up independently several times. The Egyptians already had sleeved linen shirts in the First Dynasty, around 3000 B.C.; elegant early specimens are housed at the Petrie Museum of Egyptology in London. But sleeved clothing did not remain popular in Egypt, and the early Mesopotamians did not use sleeves at all, if we are to go by their depictions of themselves. The people of Europe and the steppes seem not to have picked up the notion until the early second millennium B.C., only a few centuries before someone made the sleeved shirt Cherchen Man wore to his grave. A second woolen shirt (white) and part of a third (purply-red-brown) have also survived, the latter piped with yellow and brown.

We drew nearer to an explanation for the mysterious purply-red-brown dye when we inspected the pants, partial shirt, and some other swatches of this strange fabric up close. Working in our makeshift study room with ten-power magnifiers and good light, Irene and I turned to each other simultaneously to ask, "Are you seeing what I'm seeing?" Both of us had learned long ago from books on textiles that you can't dye naturally pigmented wool, that only colorless (white) wool will absorb and hold a dye. But the dyers of Cherchen hadn't read those books. These purply-red-brown cloths apparently consisted of naturally brown wool tinted with a bright red dye, presumably the same chemical that, used on white wool, provided the contrastive red piping and the bright red felt of the man's leggings. The comparison of the brunette who adds red dye to her hair and gets a purplish highlight suddenly seemed especially apt.

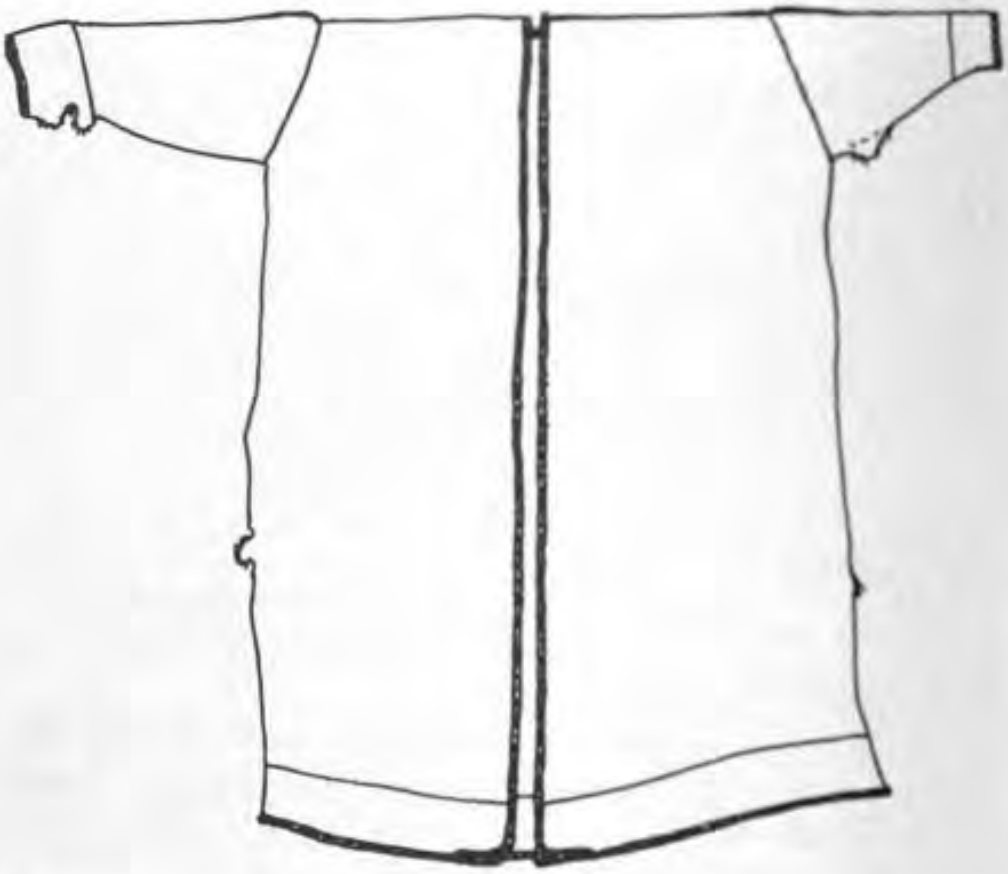


FIGURE 2.12

Pattern of Cherchen Man's overcoat, densely woven of dark brown wool with red cuffs and hem. The sleeves are slightly tapered, but the tailor couldn't bear to cut away any fabric and left the extra cloth inside. Fancy edgings plaited of red and brown yarns finished the front opening and bottom.

In Tibet today men still wear homespun woolen coats of a similar, if darker, purply-red-brown, achieved by dyeing naturally dark wool with a maroon dye.

Cherchen Man had other garments to keep him warm, in particular two remarkably heavy, long-sleeved overcoats, one of pale tan wool and the other very dark brown with red at the wrists and bottom (fig. 2.12). At first we felt puzzled by the mode of manufacture of the brown coat, for the line of weft, so heavy as to appear corded, seemed to dive at an angle into the decorative red bands at cuffs and hemline. In making normal plain weave, our wolf spider and her silken weft cord traversed the grass warp stems at right angles (fig. 2.4). Everything looks square in normal weaving. The funny angle in the overcoat cloth suggested that the coat had been cut and sewn on the *bias* (angleways to the warp and weft rather than square to them) and that the ends of the sleeves and bottom hem had been dipped into red dye *after* being woven and sewn up. Yet the line between the red and brown was too perfect for that. Finally the mu-

seum personnel took pity on our perplexity and opened the end of the huge wall case where the coat hung so we could squeeze inside for a closer look. Squatting in flattened pseudo-Egyptian poses, one in front of each side of the coat, we searched frantically for clues to the mystery, praying that our lungs would hold out long enough against the dust and naphtha.

"Look, the bottom edge is a selvedge!" (That's where our spider brought her silk web around the last grass blade as she turned to go back, thereby binding that stem to the others and preventing the cloth from unraveling.)

"Yes—and so is the front opening!" On the face of it, this didn't appear to make sense. We could now see two closed edges meeting at right angles and forming the structural borders of the coat. The threads inside had to run parallel to the selvedges, since they are what form those edges. This proved that the coat had been made on the straight of the cloth, not on the bias. (A cloth may be started on the loom by bending the warp threads—the grass stems—over a rod or cord. This creates a third closed edge or *starting selvedge* as the first edge, unusual in modern fabrics but a time-saver in handmade ones. See fig. 2.13a.)

"So what we took for the diagonal angle of the weft is an optical illusion!"

"How did they make it look diagonal, then?"

Our noses right up to the musty cloth now, we cough and wheeze as we hunt down rips in the fabric to use as peepholes into the structure.

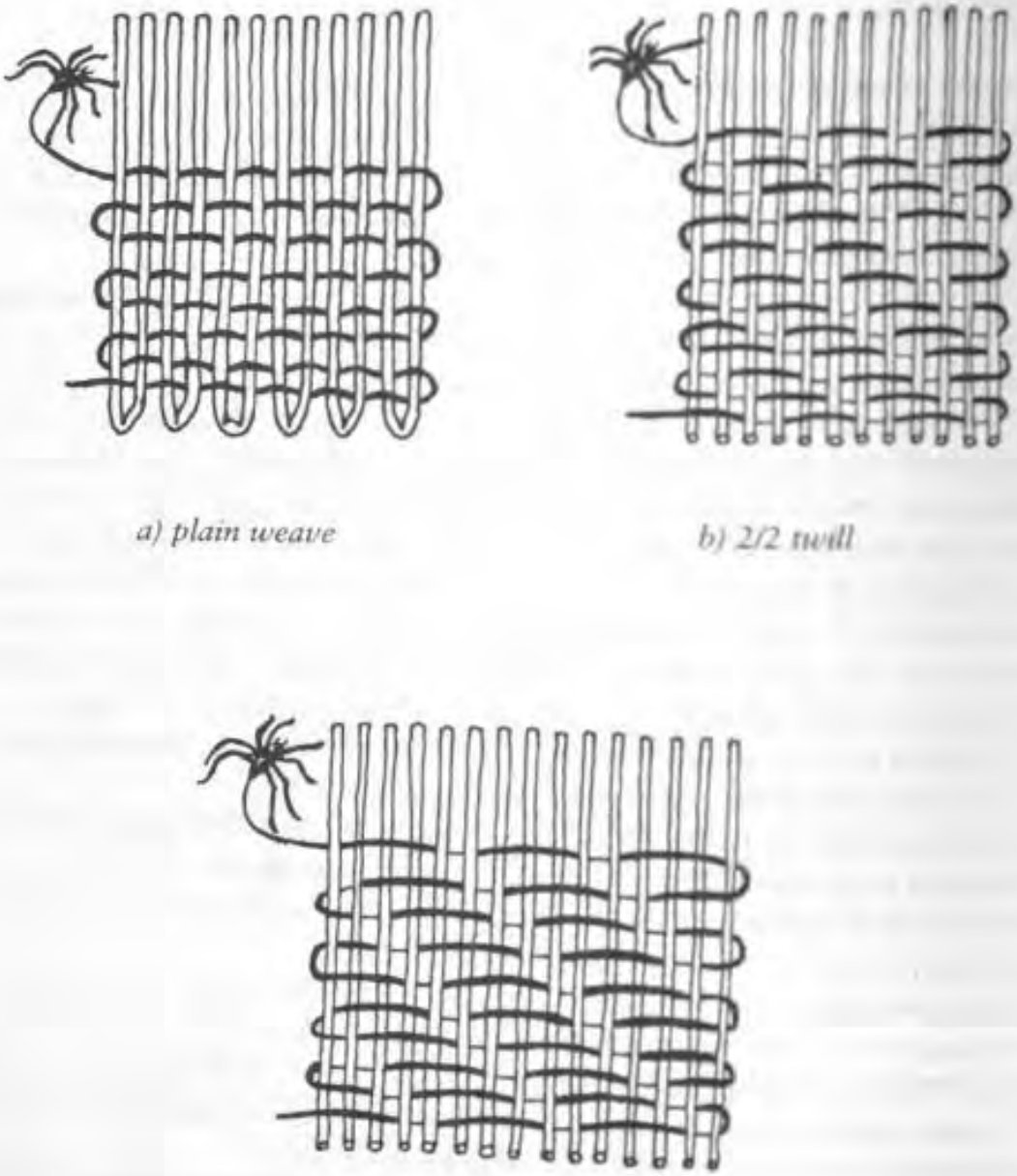
"I can't believe this—it's like twill but with all the rules broken! Do you see what they've done?"

"Sort of. Where I'm looking, they've hopped the weft over *three* warps and then under two, and then packed the weft down hard to make the cloth so dense. That's how they get that low diagonal look that fooled us!"

"Yeah, your eye just slides from one row to the next interpreting it as all one row. So the wide red edge must be woven in as a stripe—"

"Look here: there's a warp broken where the color changes. You can see the red weft continuing underneath and coming up where your eye perceives it as a different row—but it isn't."

Twill weave differs from plain weave. In the usual sort of twill (fig. 2.13b), the spider with her silken weft alternately leaps over two stems and crawls under two, all the way across each row. But when she has crawled under the last two stems of a row and turns, she starts the next row by climbing over only *one* stem before continuing her routine of under two, over two. This offsets the pattern by one grass stem and creates the steep 45° diagonal we associate with twill. The pairing of the threads also allows them to nestle closely together to form a very dense and therefore warm fabric. That warmth accounts for why twill grew so popular in the frigid climes of Europe as soon as wool arrived from the Near East in the fourth millennium, largely replacing linen and plain



a) plain weave

b) 2/2 twill

c) long-hop twill

FIGURE 2.13

(a) Starting selvedge, formed by wrapping the warp threads onto the loom in such a way as to form a closed starting edge, a third selvedge in addition to the 2 side selvedges. (b) Typical twill weave (2/2 twill), in which each thread passes over 2 then under 2 threads. In the next row the pairing of threads is offset by one, forming a diagonal pattern that runs at 45° to the threads of the cloth. The pairing, or *twinning* of the threads gives the weave its name *(twill)*. (c) The sort of *long-hop twill* found in many Cherchen textiles. Here, as in the man's overcoat, the weft hops over 3 warp threads, then under 2, offsetting by one thread in the next row. Because of the long hops, the diagonal pattern forms at a lower angle than with 2/2 twill.

weave. Cherchen Man too chose twill for his overcoat because of its warmth.

But in this Cherchen twill the spider took a running start and long-jumped over three warp stems at once, crawled under the next two, hopped over three more, and so on.[1] Coming back, as in normal twill, she offset her path by one thread (fig. 2.13c). But now the diagonal pattern climbs only one-in-three, not one-in-two, and has been tightly packed down, producing a diagonal at a much lower angle. We nicknamed the weave "long-hop" twill.

"The cuff's done the same way: the thread was dyed red, then woven in as a simple stripe, using this funny twill." Snorting and coughing, but with our mystery solved, we hastily made note of other interesting features (see fig. 2.12) and extracted ourselves from the case.

Originally the overcoat lay under a leather saddle in an upper layer of the tomb, well above where the man's body lay (fig. 2.14). It was therefore one of the first things out of the pit, and the gallery's designer had displayed it beside some enlarged photographs of the digging of the man's tomb.

One of the excavators at the Cherchen site was an Uyghur archaeologist, Dr. Dolkun Kamberi, who had done research in art and archaeology at the Ürümchi Museum and Xinjiang Institute of Archaeology for many years. When it finally became permissible for Uyghurs (a heavily controlled Turkic "minority" group) to leave China, he and his family had traveled to New York, where he spent five years getting a doctorate in Asian history at Columbia University. He returned, diploma in hand, the day after our little group arrived in Ürümchi. Kamberi no longer works there, but his return was heartwarming to behold. As news spread through the building that he was back, the guards and other workers came running to greet him with big grins, hugs, and even a few noogies. Clearly Kamberi had won the hearts of the people he had worked with.

During his time at the museum Kamberi and his archaeological colleagues had combed the southern edge of the great Taklamakan Desert for evidence of ancient towns, cemeteries, and rock carvings. At Cherchen, the only town of any size in the entire southeastern quadrant of the Tarim Basin (itself an oval 400 by 800 miles in diameter, mostly desert), they learned that locals had discovered an extensive antique cemetery on a plateau above the nearby hamlet of Zaghunluq. People often went to dig the salt present in concentrated patches on this plateau, nicknamed Tuzluqqash, Uyghur for "salt rock." In some places the salt occurred in such pure form that it could be used directly for cooking without further refinement. The ancient burial ground of several hundred graves

[1] In other pieces we saw, the weft hopped as many as five warp threads at a time, while still offsetting by one with each new row. As in the overcoat (over three, under two), the number of warp threads hopped over generally did not match the number climbed under.

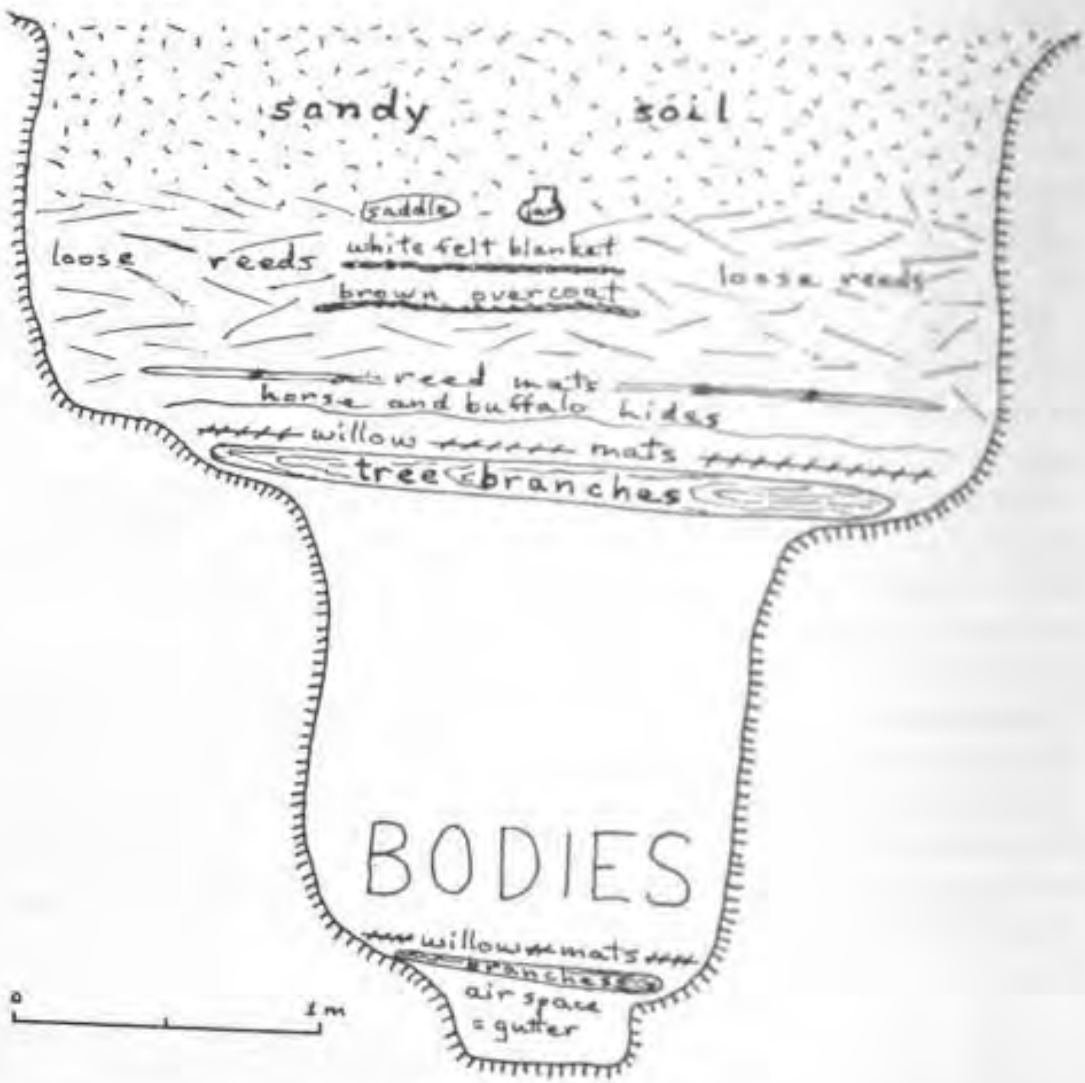


FIGURE 2.14

Diagram of construction levels in Tomb 2 at Cherchen, ca. 1000 B.C., showing a cross section across the narrowest part. Cherchen Man was found near the bottom (at "BODIES"), lying on mats and branches over a channel that promoted airflow. His brown overcoat and saddle blocked the tomb mouth higher up. (Vertical scale of filling not exact.) See fig. 3.1 for the horizontal layout of the bodies. (After Kamberi.)

stretched for three-quarters of a mile in length and roughly half a mile in width (1.1 by 0.75 km). Some of the tombs had already been looted. In trying to salvage the textiles that lay about at one spot where the village diggers had left them, the museum workers found the large intact tomb that held Cherchen Man and his family.

As seen in the gallery photograph, the main excavation pit looks wide but shallow at the top, more like the sand trap of an ant lion than like a vertical shaft; beyond and around it stretches barren desert, with a patch of green trees

marking the village in the distance. Sandy soil naturally forms into a saucer-shaped trench, since vertical walls are impossible to maintain in sand. The sides, seeking their preferred angle of repose, will quickly slump into the hole and bury everything—the site and the archaeologists too, if one is not careful. With a dish shape you have to move more dirt, but you only have to move it once. To get to Cherchen Man's tomb, the Uyghur team first had to dig through half a yard of sandy soil and a one-foot layer of scattered reeds, over an area of ten by sixteen feet (fig. 2.14). Among the reeds they found two drinking horns (made from cattle horns) and a sheep's head. Just beyond the man's tomb, at the same level, the skull and front leg of a horse came to light. Under the reeds, blocking the tomb mouth, they found a pile consisting of the saddle and a black, round-bottomed clay jar lying on a white felt blanket, with the red-trimmed brown woolen coat underneath them. Immediately below this group the burial chamber was lidded with layer after layer of reed mats and skins of wild buffalo and horse, all resting on a roofing of thick branches.

The key picture shows the moment at which the excavators finally broke through this roof into the part of the grave with the mummies. Down in the middle of the pit two heads are visible, one of them blond, both apparently busy with something. Learning that the picture had been taken by Dolkun Kamberi, the only person we had seen at the museum who doesn't have black hair, Victor Mair inquired of Dolkun what other workman was blond. Dolkun speaks excellent English (and Chinese too, as well as his native Uyghur); even so, he seemed puzzled by the question. Then he burst out laughing.

"That head? That's not a workman," he exclaimed. "That's the head of the mummy himself—they're lifting him out!"

So close to alive do they appear in death.

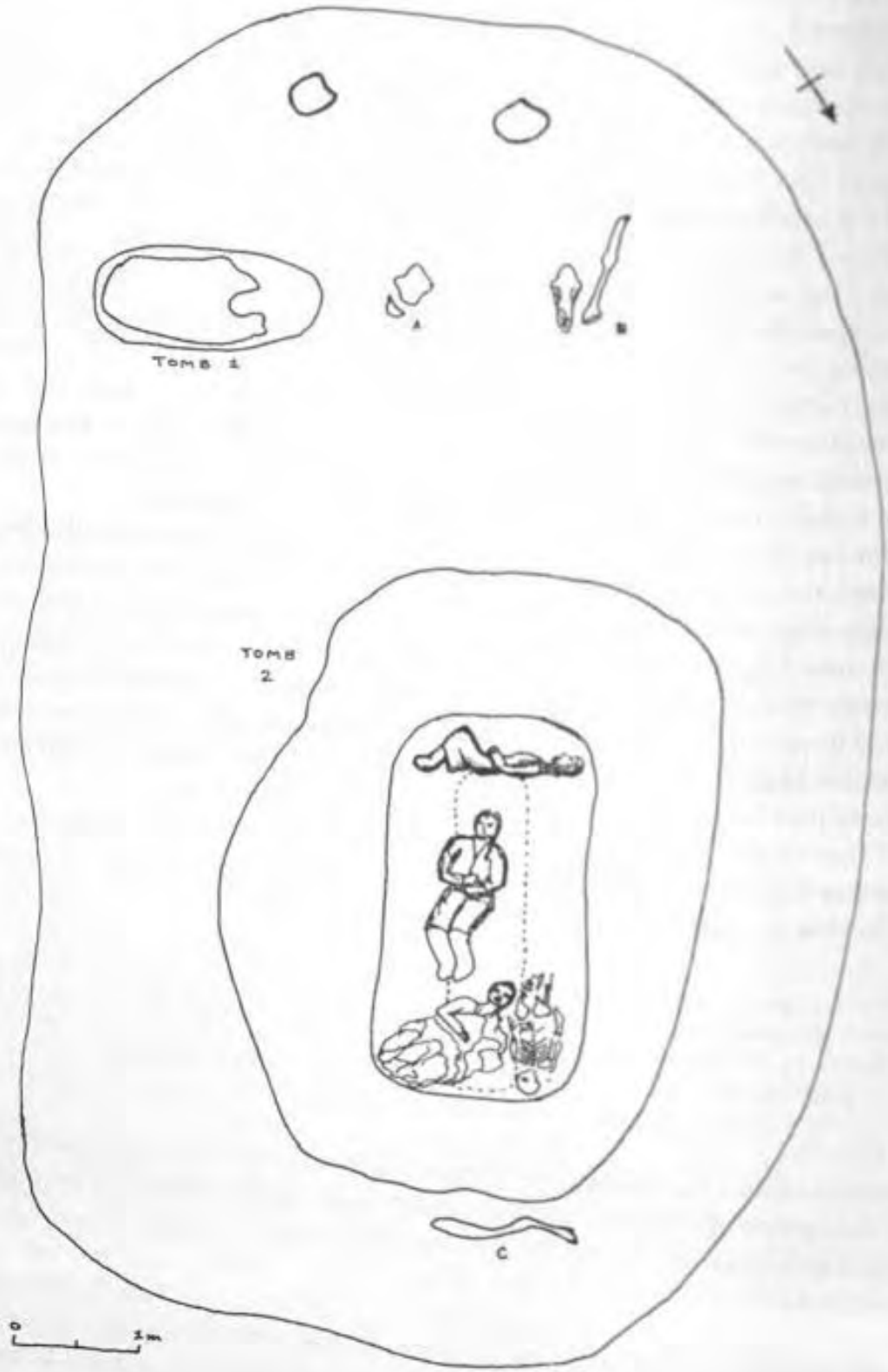


FIGURE 3.1

3

Plus Three Women and a Baby

CHERCHEN MAN was not alone down there in his grave: three adult women shared it with him (fig. 3.1). Two of their corpses had decayed to varying degrees, but the third remained in excellent condition, clothes and all.

The Cherchen Woman, as I shall call her, must also have been imposing in life, for she too stood well over six feet tall (1.9 meters; plate 2b). She lies in the gallery with her head propped up and her knees raised, hands held across her stomach by a wrist cord braided of two blue, two pink, and two red yarns. Her hair of light brown shot with white she wore braided into two long plaits, to which she had added two more artificial queues. One plait has a red woolen yarn braided in with one of its strands, while in two others the hairdresser had added red wool only for the last four inches, folding the thread so that half went into each of two strands. The tips of the completed braids were then plaited together and tied.

Like Cherchen Man, the woman wears a dark red chin strap, which, however, had failed in its task, leaving her mouth dried wide open, her desiccated tongue filling the gap. Paint half covers her face: golden yellow spirals across the bridge

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Opposite page: Layout of intact tomb group at Cherchen, ca. 1000 B.C. Tomb 1: Grave of baby, covered by section of poplar trunk. Tomb 2: Grave of Cherchen Man, Cherchen Woman, and two other women, showing disposition of bodies at bottom of shaft. Dotted line indicates outline of channel under tomb floor (see fig. 2.14). (A) sheep's head; (B) horse's skull and horse foreleg stuffed with reeds; (C) large stick. (After Kamberi.)

of her nose and a large red triangle with more yellow spirals inside it on each cheek (plate 3a). She too has tufts of dark red yarn slipped through the lobes of her ears.

They match her dress: a calf-length robe of dark red, trimmed over the structural seams and around the neck with a slim pea green cord stitched down with little groups of alternating black and white threads. The material of her gown, densely woven in long-hop twill (fig. 2.13c), is of wool like all the other fabrics, yet with an extra sheen to it. Perhaps, Irene Good surmised, mohair or even crude silk had been mixed in with the sheep's wool. But as the woman's showcase remained sealed while we were there, we had no way of knowing. The sleeves, simple tubes sewn to the armholes in the body of the garment, reach down to the wearer's wrists, but the space under each armpit was left open to the breezes.[1] At the bottom of the dress, startlingly coarse stitches of brown yarn hold the hem in place. Below this, one can see the lady's knee-high boots of soft white deerskin and, here and there, glimpses of the felt padding inside them—yellowish woven felt with a bit of blue showing.

This woman had lain crosswise in the tomb, just beyond the man's head (fig. 3.1). At his feet lay two more women, one of whom time had reduced to little more than a skeleton. The other (plate 3b), although disintegrated in the middle like the Egyptian mummies, was still for the most part well preserved. One could still see her face, with high-bridged nose and mouth gaping wide, and she still wore tall white deerskin boots and a dark red dress with wrist-length sleeves like the first woman's. Over part of her lay a big cloth with bold red and white interlocking swirls looking like a dozen pinwheels set off all at once on the Fourth of July. Neither of these ladies resides in the public gallery, but a similar swirled cloth is on display (fig. 3.2). Originally it had been dyed a vivid turmeric yellow, faded now from sitting under the gallery window but still bright on the underside. After dyeing, the design of red and blue interlocking spirals had been *painted* onto the woven wool. Painting fabric is a rare technique in the ancient world and is another indicator of the versatility of the clothmakers of ancient Cherchen.

The spiral patterns on these cloths hold interesting clues because of their relationship to a major form of textile art found in Central Asia today. The

[1] A sleeved coat with similar openings under the arms was found in Egypt in a grave dating to the sixth or seventh century A.D., where it belonged to a Sassanian or Parthian (Iranian) riding outfit. Underarm openings seem also to have survived into this century in a number of folk costumes (ranging from Macedonia to Iran), all of which could lay claim to Iranian or Turkic influence or origin. In some cases the slit was demonstrably used as a way for the arm to bypass the sleeve sometimes—in hot weather or for special jobs.

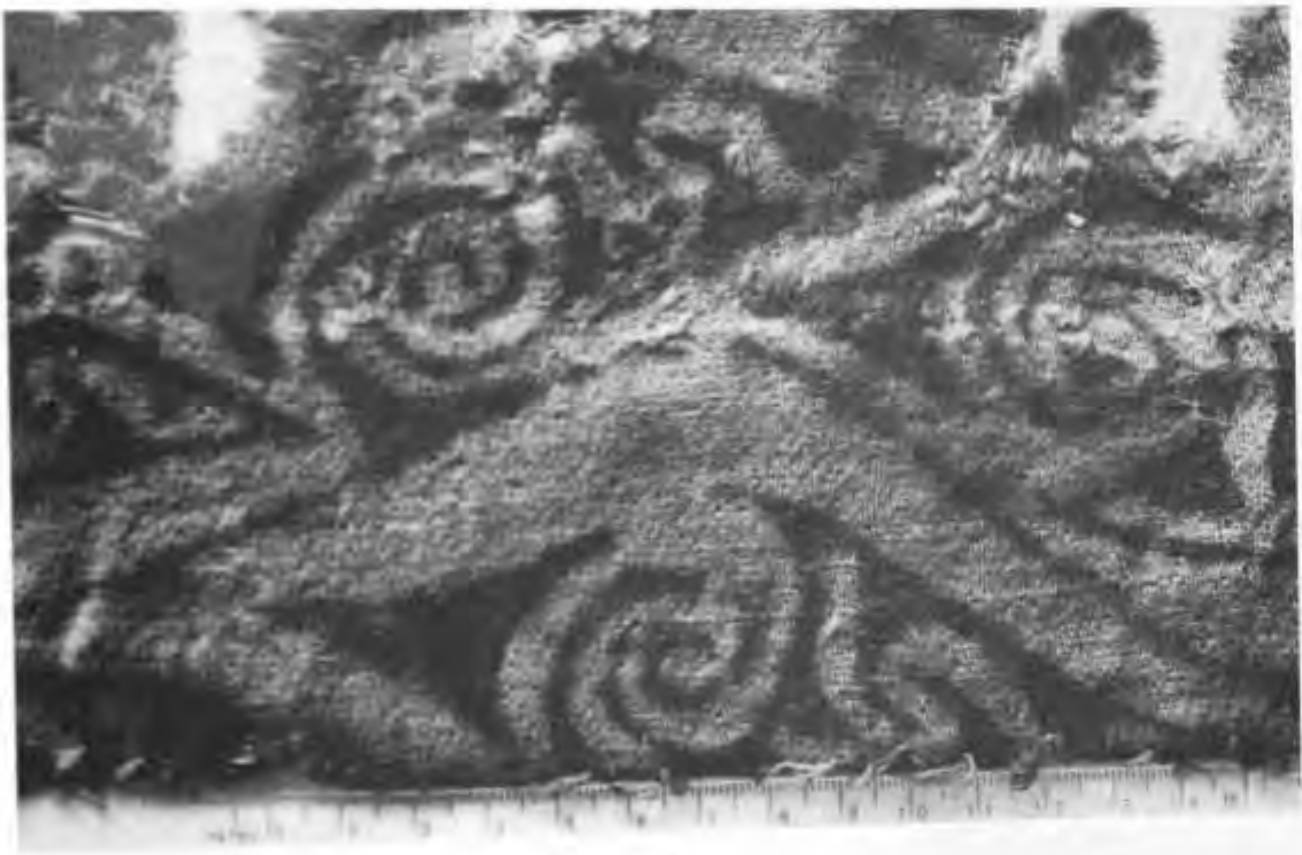


FIGURE 3.2

Yellow woolen weft-faced cloth painted with red and blue spirals, from Tomb 2 at Cherchen, 1000 B.C. Compare cloth in plate 3b.

Cherchen spirals don't look like tidy little Aegean or Near Eastern spirals, which typically come in rows. Instead they sprawl all over the surface in waves, interlocking in all directions. They imply an origin in feltwork, even though the few ancient pieces of true felt we saw happened to be plain, and not from this quadruple burial.

The nomadic herders of Eurasia, as we said, have relied upon felt for the past several millennia as their most important construction material. William of Rubruck, a Franciscan monk from Flanders who set out on a Christian mission to the Mongols in 1253, observed this custom among his hosts: "With the coarse [wool] they make felt to cover their dwellings and coffers and also for making bedding. . . . From felt they make saddle pads, saddle cloths and rain cloaks, which means they use a great deal of wool." In addition, because nomadic herders move constantly, they carry few large objects. Whatever art they use to embellish their lives must ride piggyback on the necessities. Thus they have become masters at decoratively sewing their felt. In describing the

Mongol felt tents, or yurts, William of Rubruck says: "Before the doorway they also hang felt worked in multicoloured designs; they sew coloured felt onto the [piece that forms the basic hanging], making vines and trees, birds and animals."

Because of its matted structure, however, felt has a peculiar property: wherever you sew it along a straight line, the felt is likely to tear, just as a paper towel tears off along the line of perforation. The solution? Sew interlocking circles and spirals. Then the lines of sewing reinforce one another. So nomadic art of the steppes characteristically winds and curls (fig. 3.3) even when it has been transferred to wood carving, as on the base of the spindle found at Cherchen (fig. 3.4), or to appliqués on *woven* cloth (where the curls are unnecessary), which we saw everywhere in both Chinese and Russian Turkestan (fig. 3.5).

One of the most charming pieces of clothing from this tomb probably belonged to one of the three women: a cobalt blue shawl woven in a loose and gauzy plain weave with two slim cherry red stripes through it (plate 4a). Along the two sides the brown side selvedges have been turned and hemmed prettily with long white stitches, once again looking like the dashed white lines on a road. At both ends the weaver wove a handsome band ribbed with alternating bars of cherry and blue, then braided the blue warp ends into fringes tied off with overhand knots.[2] One could wear such a wrap to a soirée today without feeling ashamed.

Why were these three women buried with the man? The mind runs immediately to the ancient Indo-Iranian custom of suttee *(sati)*, whereby the society required a man's wife to accompany him to the grave if he died before she did—a deed usually accomplished by her climbing onto his funeral pyre. But these bodies were not cremated, and no visible signs of violent death have survived the millennia. Of course they could have taken poison, but they might have died simultaneously by accident, for instance in an epidemic or other sudden catastrophe. (I recall noticing in Jacksonville, Oregon, an old tombstone of a family of five, all with the same date of death. It read: "Massacreed by the Modoc Indians." That sort of thing can happen.) New excavations in progress at Zaghunluq show that some later tombs were reopened many times to place more burials in the chamber, being constructed with an entry corridor for the purpose.

[2] The bars of alternating color, a favorite ancient pattern because it is so simple to weave, result from alternating rows of cherry and blue weft in plain weave. The weft is packed in so tightly that the warp and the weft below it can't be seen, producing a ribbed or corduroy-looking band in which the ribs stand out as alternating bars of color: one blue, the next cherry red, and so on. If we had a red and a blue spider weaving side by side, the red spider would *always* hop over the even warp stems (covering them with her red weft) and under the odd ones, whereas the blue spider would *always* do just the opposite, as they wove alternate rows. Thus even stems would get covered only with red and odd stems only with blue.

FIGURE 3.3

Appliquéd felt ornamentation on a felt boot from the burial in Kurgan 2 at Pazyryk, in the Altai Mountains north of Xinjiang, ca. 500 B.C. Textiles there were preserved by permafrost. Note the similarity of the spiral pattern in the felt to the painted spirals from Cherchen in fig. 3.2 and plate 3b. (After Rudenko.)

FIGURE 3.4

Wooden spindle found in Tomb 2 at Cherchen, with spirals carved on its whorl.

FIGURE 3.5

Inside a Kazakh yurt in the Nan Shan (Southern Mountains) south of Ürümchi, June 1995. Some of the hangings and both caps are covered with curly decoration typical of traditional feltwork, although these pieces have factory-made woven cloth as a base.

But such is not the case here. We will need to dig up many more graves of this early culture to discover whether simultaneous multiple burials were a habit or a random occurrence.

A FEW feet south of the mouth of the large tomb, near the horse head and foreleg (fig. 3.1, top left), the excavators found another grave, one added shortly after the principal burial. Because the little grave lay slightly above the mouth of the large tomb, the archaeologists had in fact found it first and named it Tomb 1, the grave of the four adults being Tomb 2. A smooth, curved slab of wood gave first notice of its presence. Underneath the slab, a small secondary pit held a tiny, perfectly preserved baby (plates 4b, 5a).

The infant, probably less than three months old, lay on a blanket of white felt, with a second, even whiter blanket of long-hop twill (fig. 2.13c) folded over some raw wool and placed like a pillow under its head. A pair of unusual gifts lay with the child: a small cow's horn cup and what may be the world's earliest preserved nursing bottle, fashioned, nipple and all, from the udder of a sheep (see plate 5a, to left). The baby could suck milk from the teat when the bag had been filled and tied shut at the other end. The curved plank of poplar wood (hollowed from a section of trunk) and a thick layer of reed mats covered the little burial in its shallow oval pit. Two feet away, in another hole, lay a sheep's head.

Two small bluish stones still close the infant's eyes, and a wee tuft of orange wool protrudes from each nostril (a means, known in other parts of the world, of wicking away any decomposition fluids that might come out through that orifice). Time and the desert have so perfectly preserved the face that its little ski-jump nose is intact, the tiny eyebrows still arch neatly above the blue eyestones, and wisps of pale brown hair peek out onto the forehead from below the cap. Over the baby's head someone had carefully patted a bright blue bonnet of combed and barely felted wool with an edging of bright red in the same material to frame the face. This unique headgear earned the infant our nickname of the Blue Bonnet Baby, to distinguish it in the gallery from a much earlier child's mummy wrapped in beige and brown (see Chapter 4).

The rest of the infant's body was neatly wrapped in a purply-red-brown shroud or baby blanket identical in color to Cherchen Man's suit, the whole bound up by several turns of a twisted red and blue cord exactly like the one holding the man's hands in place. The cloth of the blanket, however, differed from that of Cherchen Man's suit by a subtle but handsome texture stripe. Both cloths consist entirely of plain-woven woolen thread of a single color and weight, but after each group of twenty-five to thirty rows, the maker of the baby's shroud added three or four rows of the same yarn that had, however, been overspun (fig. 3.6). The special yarn twisted into gnarls in the cloth, giv-

FIGURE 3.6

Detail of the Cherchen baby's shroud, showing narrow texture stripes of overspun yarn woven in at regular intervals. Overspun thread is made by twisting the fibers so much that the thread wriggles up into kinks when released, instead of lying flat.

ing a completely different texture to the thin stripes containing it. The trick is clever yet simple, making the most of very little—a trait we saw often among the mummies' possessions.

Not only is the dyed thread of the shroud identical to the man's clothing, but the bonnet appears to have been made from the same supplies of blue and red combed but unspun wool used for the man's leggings and the binding cords of both mummies. The similarities in these various materials make one suspect that the Blue Bonnet Baby was the man's own child, dressed from the same storehouse of supplies and dying soon after him. Indeed the whole group of finds suggests that one of the three women was the infant's mother and the nursing bottle a desperate but doomed stratagem by the survivors to keep the little fel-

low alive after her death. We take sterilized baby-formula and boilable glass bottles for granted today, but not so long ago, and in undeveloped countries even now, babies deprived of mother's milk routinely die from germs in the substitute milk supply unless milk is provided by a wet nurse, another lactating woman. (Well-wishers and avid marketers who provide powdered infant formula to such countries usually don't understand that the contaminated water used to mix with the powder dooms the child to a death probably more horrible and at least as certain as mere starvation.) The earnestness and inventive care of these prehistoric people still touch us across the millennia.

THE ÜRÜMCHI archaeologists worked on three other tombs at Cherchen, just a few among the hundreds in this ancient burial ground. None of the three graves was intact; the local salt diggers had come on them by accident and rummaged them thoroughly. The men later led Dolkun Kamberi and his associates to the site of their finds, a barren waste with little surface indication of the burials beneath. Nor had the bodies survived well in the disturbed graves. But some of the textiles had. With little else of human manufacture in the burials, these textiles yield the best clues we have just now to the local culture, contacts, and origins of the inhabitants of this far-flung place. So let's have a look at some of the fabrics and at what they tell us.

Tomb 3 produced two spectacular examples of a kind of cloth not seen before in ancient finds, though it proved to have interesting connections. Great lengths and widths of fabric had been made up laboriously by sewing together flat plaited bands, each only a centimeter wide—rather less than half an inch (plate 6, fig. 3.7). In one "patchwork" the best-preserved bands measured 143 cm long (roughly 5 1/2 feet), while in the second at least thirty-seven bands were sewn side by side. Some bands were monochrome, in bright shades of turmeric yellow, red, maroon, or blue; others contained multicolored patterns. Typically the cloths began with a few plain braids of different colors—say, yellow, red, yellow—then a patterned one, then several more plain ones of whatever colors the makers liked, another fancy one, and so on. The patterned ones took far more time to make, of course, so spreading out the "expensive" ones maximized their effect, as when people decorate their kitchens today with a few hand-painted tiles scattered among many plain ones. The designs included lozenges and triangles alternating in color like a harlequin's suit, some with decorative tufts at regular intervals where changing colors were tied on and off (fig. 3.7), and a particularly complex pattern that looked like little double axes laid end to end (fig. 3.8).

Huge cloths made up from narrow bands seemed, on the face of it, preposterously labor-intensive. That's like planting a lawn one seed at a time. Why not set up a single warp and then weave a lot of stripes on it, plain or fancy? But

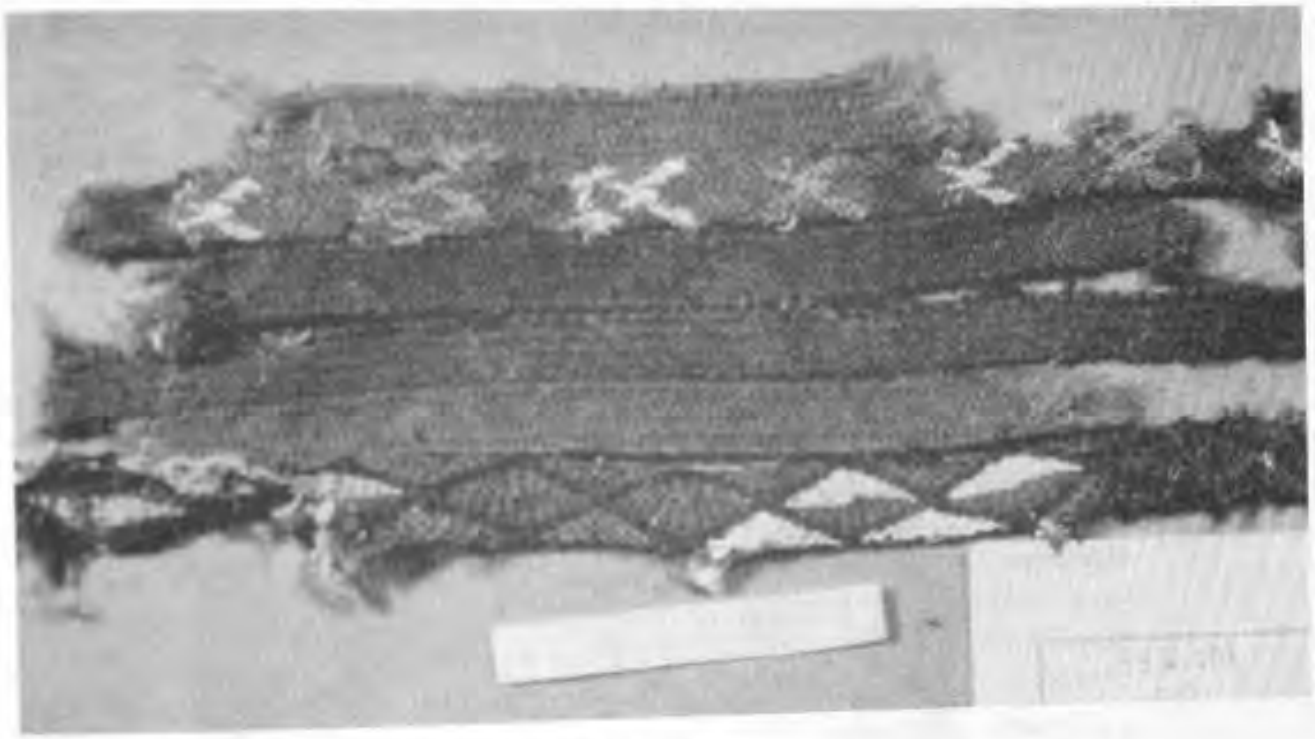


FIGURE 3.7

Patterns on narrow plaited woolen bands found in Tomb 3 at Cherchen, 1st millennium B.C. In the lowest patterned band the ends of the different colored threads were left to hang out in little decorative tufts. (Photo I. Good.)

FIGURE 3.8

Design resembling double-bladed axes laid on their sides, from a plaited woolen band found at Cherchen, 1st millennium B.C.

as I thought about the culture as a whole, a different picture began to emerge.

These people made their textiles from sheep's wool. Someone had to tend those sheep, spending long and largely idle days and nights out in the meadows wandering about with them. Weaving on a loom requires many hours working in one place, and a large loom is too heavy and awkward to haul about easily, especially when a cloth is in progress. But band weaving is quite portable. Some cultures use a frame, but in most you just loop the far end of your long, skinny warp around a tree or your own big toe, pull back on the near end with your

FIGURE 3.9

Persian painting (19th century) of a young man wearing a coat of traditional striped silk that looks similar to the banded cloths of the early Tarim Basin (see fig. 3.8 and plate 6). (Courtesy of E. Ettinghausen.)

hand to create the necessary tension, and start weaving. If you have to stop and move, you just roll it up, unhitch the far end, and go. In short, anyone could weave or plait bands while herding sheep. Documentary films from 1985 show seminomadic women[3] in the highlands of Bosnia walking slowly among the boulders, great black sheepskin capes over their shoulders, singing at intervals

[3] Technically, transhumant. That is, they spend the winter in permanent houses in the lower valleys, with their sheep, then herd the flocks each summer up to the mountains, where they move from one temporary camp to another as the sheep graze.

in an ancient style that carries great distances. That way both sheep and family know where the shepherdesses are. All the while their hands keep busy, one woman spinning onto a spindle from a distaff full of wool, the other knitting socks with her ball of yarn tucked under her arm. One has a sense of glimpsing back into a lifestyle of the Bronze Age. The pace is slow, but nothing is wasted, including time.

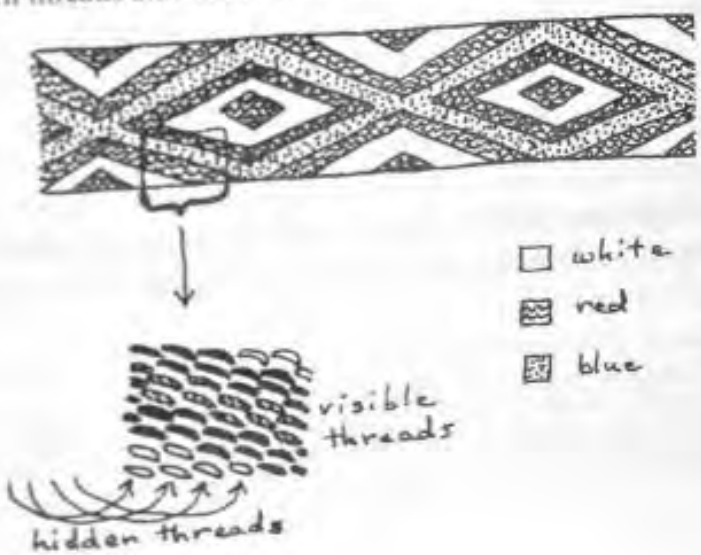
So even though a cloth of plaited bands consumed more labor than a woven one, making it this way may have constituted the best overall use of time among herders. You spin and plait your wool while on the move most of the year, then quickly sew up the bands into larger cloths during the short sedentary season. That reasoning also suggests that herding was a *major* occupation among these people.

From a distance these banded cloths look remarkably like the typical striped silks seen in Persian paintings of millennia later (fig. 3.9) and still available today in the bazaars of Istanbul and Ankara. This elegant striped cloth, a favorite of both Turks and Persians, may well have developed out of the humble prehistoric band textiles of Central Asia.

Researching how the strips themselves were made, I found that the flat bands were created by a widespread method called *oblique plaiting* (fig. 3.10), related to simple three-strand braiding but done with many more threads. The bands of the plaitwork fabrics contained anywhere from ten to forty threads, sometimes laid in double, whereas some pieces of plain red plaiting from later sites in the Tarim Basin, nearer 500 B.C., measured six to eight inches wide and must

FIGURE 3.10

Design of plaited woolen band from Cherchen, with diagram showing oblique angle both of the pattern threads and of the hidden threads that bind them together.



have required managing several hundred threads at once—probably *not* a job to do while herding sheep.[4]

I also kept an eye out for how Cherchen Man's peculiar round belt cord might have been produced—without luck until I happened to spend a weekend with a friend in Wales. Susan Wadlow and I met as children, and whenever I can, I visit her in the sheep-grazing borderlands above Shrewsbury, where the well-known medieval mystery series about Brother Cadfael is set. This area has specialized in textile production for at least a thousand years, and Susan knows much about aspects of cloth unfamiliar to me, such as lacemaking, which she teaches. Together we have solved a number of textile puzzles over the years.

My photographs of Cherchen Man's belt reminded Susan of a Japanese cord-making technique called *kumihimo*, and she fetched the stand she had made for herself when learning to produce it. A *kumihimo* stand (fig. 3.11) consists of a flat, tablelike wooden disk, about eight inches across, raised on four tall legs and with a two-inch circular hole in the middle. In use, it looks like a spaghetti-eating monster, with long strings all around disappearing into the circular mouth, for the cord forms down through the hole. A weight fastened to its starting end pulls the new cord ever downward, while the strings that go into its making radiate from the hole, cross the flat surface of the disk, and hang down over the outer edge. Each length of yarn to be used is wound around a spool-shaped weight to give countertension, making it easier to manage the whole process. Depending on the cord's pattern and how thick you want it to be, you may have anywhere from eight to a couple of dozen threads, each wound on its own spool weight. To form the new cord, you simply grab two weights that are opposite each other on the stand and interchange their places, and you keep doing this with the other pairs of weights until they have all shifted; then you start over. The process is easy—and mesmerizing. The number, positions, and colors of threads, the order in which you move the pairs of weights, and whether they pass to the right or left of each other, together determine the patterns.

Looking at the cord half formed on Susan's stand, I agreed with her: the basic structure matched the Cherchen belt cord. Only the pattern and thickness differed. We began to search through her *kumihimo* books, and eventually, at a craft fair in California, I located the right design. To obtain the sequence

[4] The patterns of alternating triangles proved to be a function of how the colored threads, moving across the plaitwork at an angle, would show on the surface for a ways, then turn a corner and run along completely hidden for an equal distance. By careful selection of the order and number of contrastively colored threads, the ancient artisans worked out a variety of geometric designs.

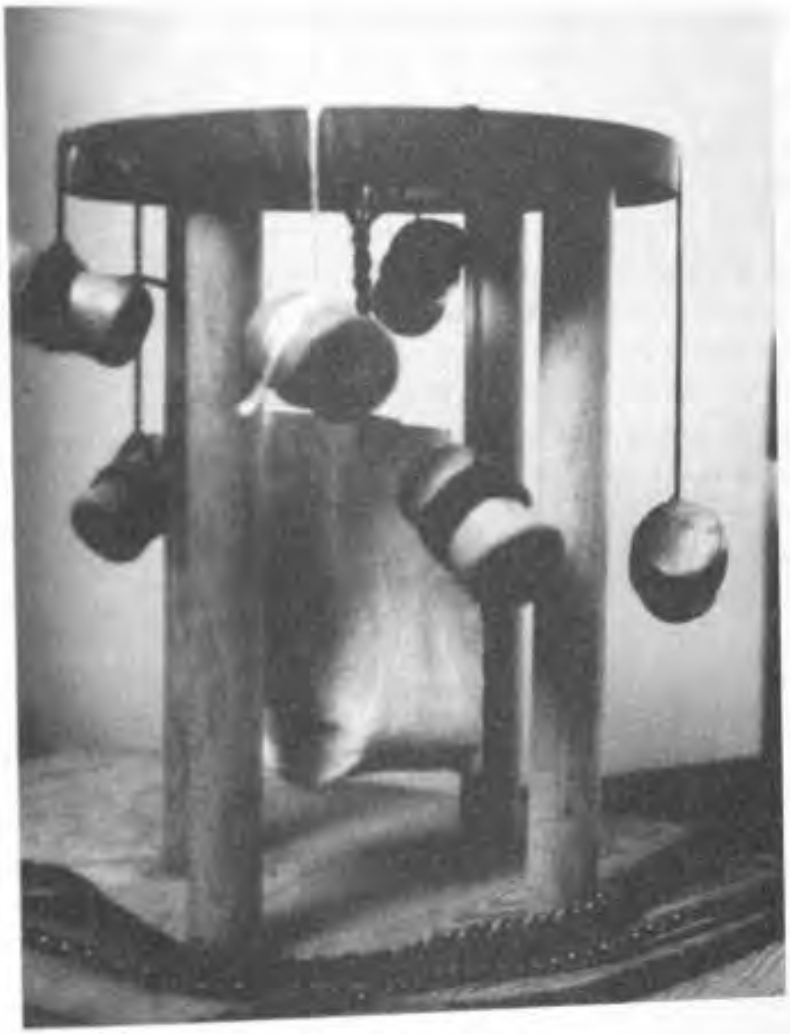


FIGURE 3.11

Wooden stand for making traditional Japanese *kumihimo* cords. The round cord forms down through the hole in the center, while the threads from which it is being made hang out over the outer rim of the stand, wound onto and weighted by heavy spools. Japanese spools are typically of wood with heavy metal cores; those in the photo are exact replicas of clay spool weights from prehistoric Greece, which weigh the same amount as the Japanese ones and were probably used similarly.

I had recorded for Cherchen Man's belt, I needed 24 threads in five colors.

Another detail struck me as I surveyed Susan's *kumihimo* stand: I had seen small, spool-shaped weights like that before. Not in Chinese Turkestan, for almost no early tools have been unearthed there yet. Virtually no grave gifts except cloth accompany the dead, and the archaeologists haven't begun to search out and excavate ancient house sites. I had seen them, I realized, in Greece, where spool-shaped objects turn up all over Bronze Age and even Neolithic

sites.[5] Excavators in Greece had repeatedly asked me what the objects were for, since they occurred with other textile implements. It turns out they are just the right size and weight for doing this sort of plaiting.

Their presence suggests, then, that not only the early inhabitants of the Tarim Basin but also those of prehistoric Greece sat around plaiting something akin to *kumihimo*. It is frustrating that in Europe we have textile tools everywhere, but virtually no textiles preserved to prove the point, whereas in Central Asia we have loads of textiles but no tools! How can we compare data, then, to know who got what from whom?

And what about the Japanese? Did they receive the method from farther west long ago or invent it on their own? Certainly we have no evidence that anyone from so far east had trekked to Central Asia yet. The Japanese archipelago lies nearly three thousand miles from Cherchen and the Tarim Basin. Even the Chinese didn't get to Inner Asia for another millennium, and China lies directly between Japan and the Tarim. So if any influence in this matter traveled to or from Japan, it was later and headed east.

As for possible influence on plaiting methods between the Tarim Basin and Europe, again it must have moved from west to east, if it existed, because many of the Aegean sites with these spool weights go back long before 2000 B.C.—that is, well before anybody had settled in the Tarim Basin. The first permanent settlers in the desert basins appear to have arrived just about 2000 B.C. The Cherchen culture, which left us the round cords, didn't flourish until about 1000 B.C., a thousand years later.[6]

Tomb 4 produced at least thirteen cloths, mostly of unclear use. Some were simply swatches of plain dark red wool in gauzy plain weave, with and without denser stripes of the same color or with stripes in a much brighter red. Others, always dark red, had probably come from garments, since they retained the characteristic piping, although we could no longer say *what* garments. The tomb also contained a dark red onion dome hat (like that in fig. 2.7) done in spiral *nalbinding* and an open-fronted white jacket with one sleeve oddly several inches shorter than the other. Did the owner have a stunted left arm? In any case, someone had carefully mended some frayed threads on the sleeve by tying their loose ends together.

Tomb 4 also contained large banded cloths. One of these (plate 5b) had been

[5] In the Aegean the Bronze Age runs from 3000 to 1200 B.C., the Neolithic from about 6000 to 3000 B.C.

[6] Quite a number of different types of plaiting, not just *kumihimo* cords and obliquely plaited bands, survived from the Cherchen graves. A particularly common cord consisted of a thick yarn of white wool covered by a "skin" obliquely plaited from alternating pairs of fine red and blue, then red and yellow (or white) threads.

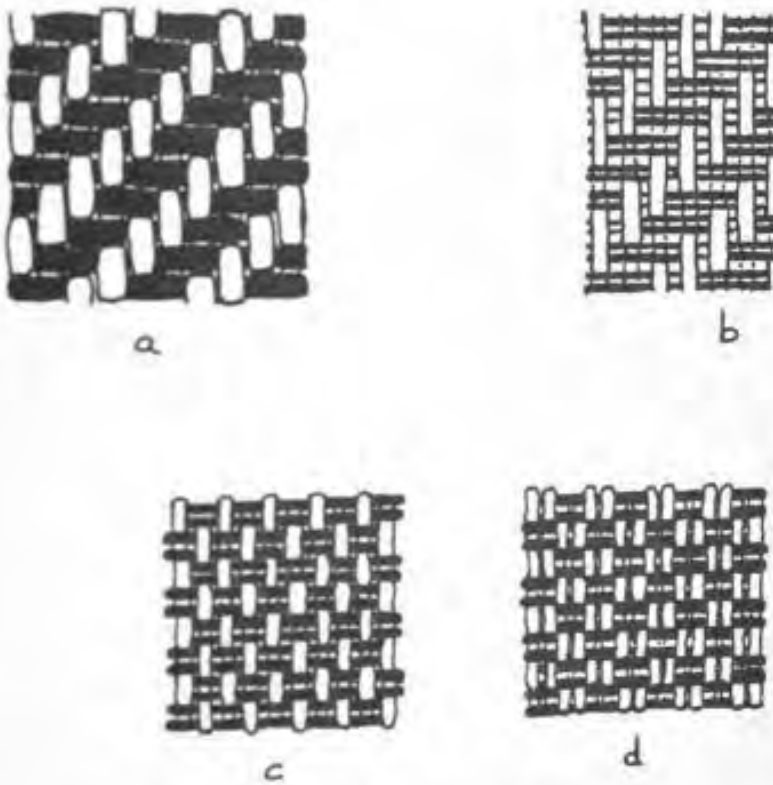


FIGURE 3.12

(a) Common (2/2) twill, in which weft goes over 2 warp threads, then under 2, offsetting by 1 warp thread with each row. (b) *Half-basket twill*, in which 2 weft threads instead of 1 are laid into each row, otherwise following the usual twill pattern. (c) Plain *half-basket weave*, in which a doubled weft goes over and under single warp threads. (d) Plain *basket weave*, in which a doubled weft goes over and under doubled warp. Note that the plain basket weave and half-basket weave are just like plain weave except for the doubling. In these diagrams (unlike the previous ones with the spiders), the threads are shown close together, as they are in most fabrics. Fig. 3.12a is the same weave as 2.13b, but the diagonal effect of twill is much more striking when the threads are pushed up tight.

sewn together not of half-inch-wide plaiting like the others, but of seven-inch-wide strips of cloth woven in an unusual weave, half-basket twill (fig. 3.12b). Red and yellow stripes alternated, except where a short stretch of yellow had been added to a red one to fill out the needed length. Clearly the culture did not set a high value on symmetry. The piece must have formed the skirt of a large robe or dress, for the ends of the strips were sewn together into a circle over six feet (two meters) around, and near the top of what's left were marks where the material had been habitually gathered—presumably around the waist of the wearer. A thick plait of red, white, and blue edged the bottom.

We know little about the occupant of Tomb 4, not even his or her sex. Local

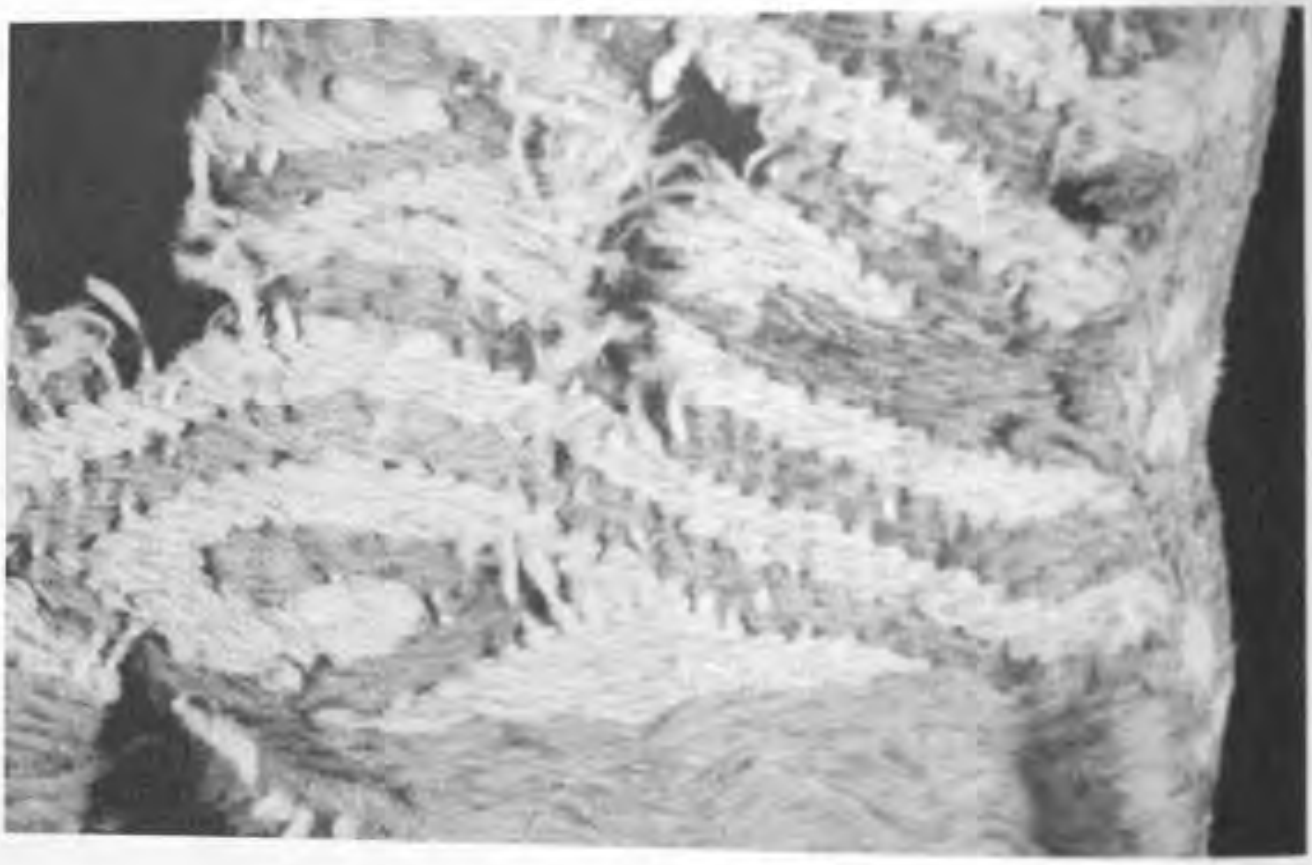


FIGURE 3.13

Twill tapestry of interlocked red and yellow spirals, from a disturbed tomb at Cherchen, early to mid-1st millennium B.C. (Photo I. Good.)

diggers had ransacked the tomb, destroying its structure and chucking things out in all directions. But the owner had good taste, for it also contained some far more intricate pieces of weaving than anything our team had seen up to this point—in particular, three elegant pieces of tapestry. One was a shred with interlocking red and yellow angular spirals (spirals again!), edged with a red, white, and blue braid (fig. 3.13). Another swatch, mainly white, had a band of zigzags colorfully executed in blue, light red, yellow, maroon, and peach.

The very fact of finding tapestry here startled us, since the Egyptians learned to negotiate this fancy technique only about 1500 B.C., after they had been weaving for three thousand years, importing the idea from their Syrian neighbors. How, we wondered, did tapestry get as far east as the eastern Tarim Basin so fast?

But maybe it wasn't quite so fast as it seemed at first glance. The radiocarbon dates of 1000 B.C. for the Cherchen burials were taken exclusively from the undisturbed tombs of Cherchen Man and his family, so this disturbed grave may have been later by several centuries, for all we know. New excavations of more than a hundred tombs at this graveyard done in late 1996, not yet published,

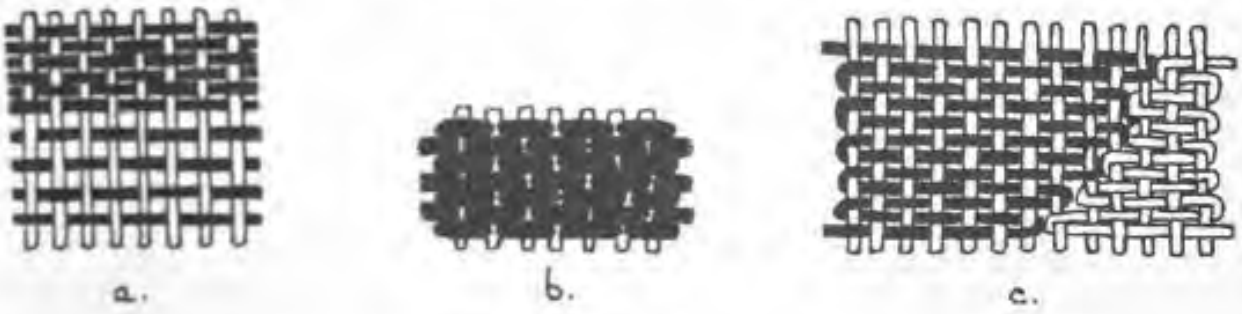


FIGURE 3.14

In many fabrics there are about as many threads per centimeter in one direction as in the other *(balanced weave)*, as in the lower part of diagram *a*. Without changing from plain weave, one can also pack the weft threads much closer together, as in the upper part of *a*. This produces a *weft-faced* weave, so called because we see mostly weft and not much warp. If one does this trick using a weft yarn that is much fatter than the warp yarn, as in *b*, the weft will virtually hide the warp. *Tapestry* uses this ability to hide the warp, so that different colors of weft alone can be manipulated to make designs, as in *c*.

show that the Cherchen cemetery up on the salt flat remained in use into the early centuries A.D. On internal grounds, a date of 500 B.C. for the tapestries would feel more comfortable to me. The presence of the peculiar purply-red-brown fabric, however, indicates that Tomb 4 belonged to a direct continuation and elaboration of Cherchen Man's culture. A strange detail of the tapestry confirms this continuity of tradition.

Tapestry depends upon tamping down the weft so tightly that it covers the warp (fig. 3.14b). That is, here our spider lays down plump rows of her silken weft so close together that you can't see the grass stems of the warp anymore. (The weave itself is normally just plain weave.) Since the warp doesn't show, changing the color of the weft alone during weaving will produce solid fields of color usable to produce designs—simple geometric ones, like the Cherchen pieces, or entire scenes of people, animals, landscapes, and so forth, as in the huge and famous Gobelin tapestries created for the French royalty. (Ironically, the famed Bayeux Tapestry depicting the Norman takeover of England in A.D. 1066 is *not* a true tapestry since the successive scenes are entirely embroidered onto the surface of plain cloth, rather than woven in.) The underlying technique of packing the weft to hide the warp, known as *weft-facing*, had probably been invented in the Near East as a response to trying to use wool for weaving, back around 4000 B.C. when woolly sheep first became available.[7] The same impetus had apparently led to the invention of twill in Anatolia about the same time.

[7] Although sheep had been among the first animals domesticated, around 8000 B.C. in the Near East, it took four thousand years of inbreeding to come up with usably woolly ones. Before that, sheep were kept for their meat. See Chapter 7.

Why these changes in weaves when wool arrived? The only fibers that people had before that—namely, plant stem fibers like linen and hemp (used since 25,000 B.C. at least)—don't stretch, whereas wool fibers can stretch tremendously (just like the hair from your own head: try pulling on both ends of one hair). When you pull tight the warp threads on the loom so you can weave the weft in around them, plant fibers stay put but wool keeps stretching. And it may eventually snap as you continue to punish it by beating the rows of weft thread in. Spacing the warp widely and then covering it, as in typical *weft-faced weaves* (fig. 3.14), protects the warp from wear; similarly the pairing of warp threads in twill (fig. 3.12a) cuts in half the strain during weaving. In short, both twill and tapestry developed in response to the peculiarities of sheep's wool, and all three—the two new weaves and the wool itself—developed far to the west of Central Asia and long before the graves of Cherchen.

The red and yellow spiral tapestry startled us, then, in not quite conforming to the way the rest of the world made tapestry. True, the weft covered the warp as it should, but looking closely, we saw that the weave wasn't the expected plain weave. These people had used their own peculiar long-hop twill (fig. 2.13c) to make their tapestry! Normal twill, which jumps only two threads, won't cover the warp, but by long-jumping over three and four warp threads at a time, as they had here, the weavers could easily make the weft cover the warp to produce a solid field of color. Such a substitution of technique suggests that these people had learned to make tapestry just by looking at pieces imported from the Near East, rather than by having been taught how to make it by other weavers. The weavers of Cherchen, like its tailors and hatmakers, were an inventive lot.

And nowhere more so than in the other tapestry piece from Tomb 4, a spectacular turquoise blue shirt or chemise with a stepped collar, broad and flat like that of a sailor suit, and a strip of polychrome tapestry setting off the bright red cuffs and hem (plate 7).

At a distance the collar seemed a lighter shade of turquoise than the body, although up close the weft seemed identical. We discovered that the makers had invented a weaver's equivalent of the old jeweler's trick of mounting tinfoil behind a gem to reflect the light through it more brightly. In this case, although the warp inside the main cloth was dark brown, within the collar it was peach pink, and despite the tight packing of the weft in the long-hop twill, the warp still peeked out from underneath just enough to alter the hue. This trick made the unique stepped shape of the broad collar stand out all the more.

The construction of the collar itself was not only inventive but a skillful tour de force. It lies flat across shoulders, chest, and back (woven with the warp running from one shoulder to the other), but its outer edge decreases by five square

Mummy of a 55-year-old male, known as Cherchen Man, from Tomb 2 at Cherchen, ca. 1000 B.C., in the southern Tarim Basin. He was 6'6" (2 m) tall, with light brown hair; he wore white deerskin boots and brightly colored woolen pants, shirt, and felt leggings.
(Photo Jeffery Newbury/©1994. Reprinted with permission of *Discover Magazine*.)

PLATE 1

Cherchen Man's belt cord, plaited from yarns of five colors in a technique known among handcrafters today by the Japanese name *kumihimo*. (Photo I. Good.)

Mummy of Cherchen Woman, best preserved of women in Tomb 2 at Cherchen (1000 B.C.). She stood over 6 feet tall (1.9 m) and wore a red dress and white deerskin boots.

PLATE 3A

Close-up of Cherchen Woman's face, with a chin strap that failed to hold her jaw shut, leaving her with a typical mummy gape. Note the face paint of a red triangle on her cheek, with yellow spirals both inside the triangle and climbing over the bridge of her nose.

PLATE 3B

Less well-preserved woman found to right of Cherchen Man's feet in Tomb 2; ca. 1000 B.C. The cloth visible on her left knee is decorated with red and white spirals typical of steppe art. (Photo D. Kamberi.)

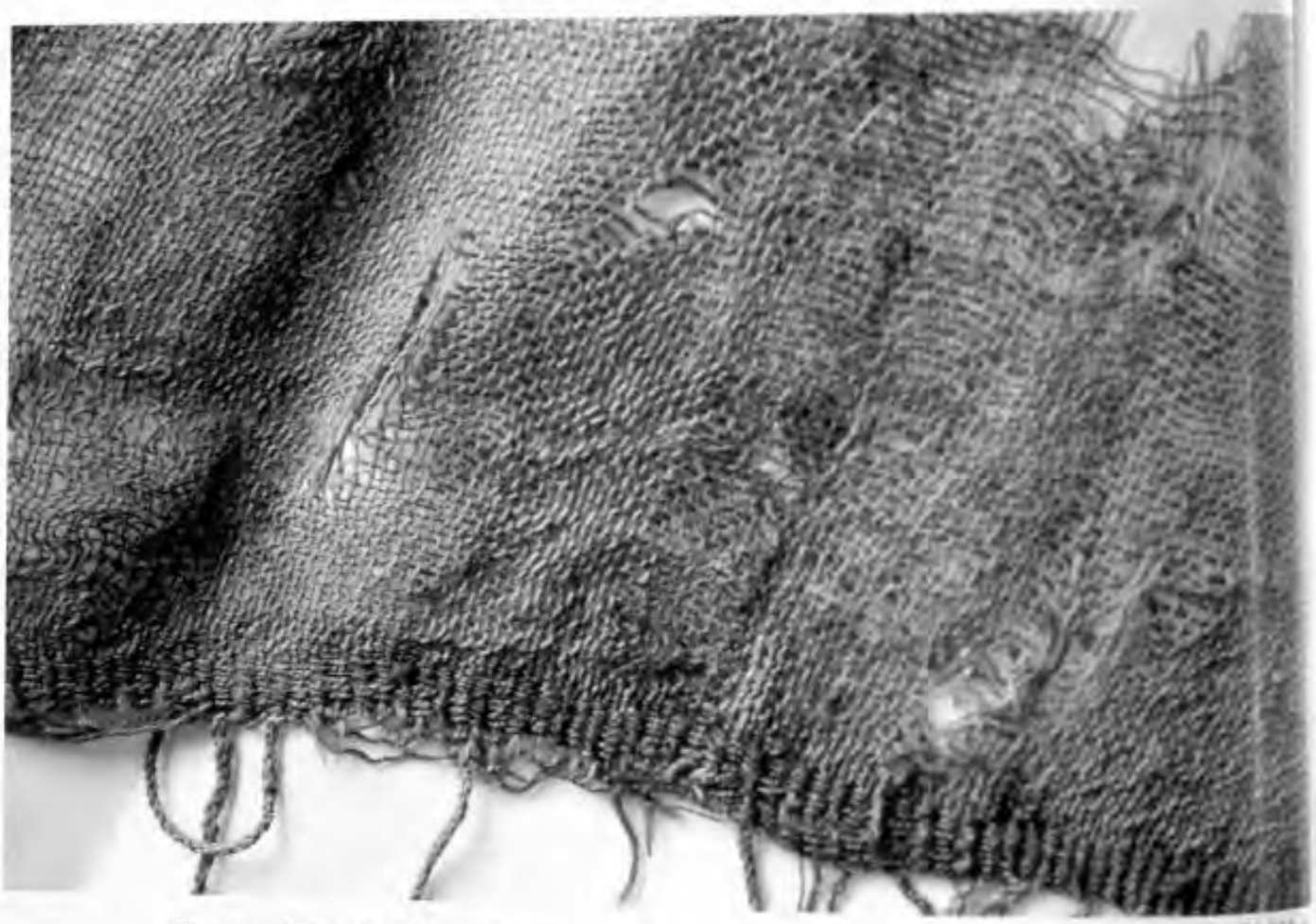


PLATE 1

Blue wool shawl with 2 red stripes, 2 ribbed and bicolored end bands, and knotted fringes, from Tomb 2 at Cherchen, 1000 B.C. (Photo I. Good.)

Mummy of infant in a felt bonnet of blue wool with red edging; from Tomb 1 at Cherchen, 1000 B.C. Little blue stones cover the eyes, and tiny wisps of red wool fill the nostrils.

PLATE 2

PLATE 5A

Mummy of the 3-month-old infant found in Tomb 1 at Cherchen; ca. 1000 B.C. The similarity of the tie cord and of the dyed wool in its shroud and felt cap to Cherchen Man's clothing suggests the baby belonged to his immediate household. Burial gifts included a cowhorn cup (*right*) and a sheep udder fashioned into a nursing bottle (*left*).
(Photo J. Newbury/*Discover.*)

PLATE 5B

Irene Good (*foreground*) and the author studying a striped woolen skirt from Tomb 4, Cherchen, in a workroom at the Ürümchi Museum in 1994. Latex gloves protect the ancient fabrics from the oils in our skin, while dust masks protect our lungs.
(Photo V. Mair.)

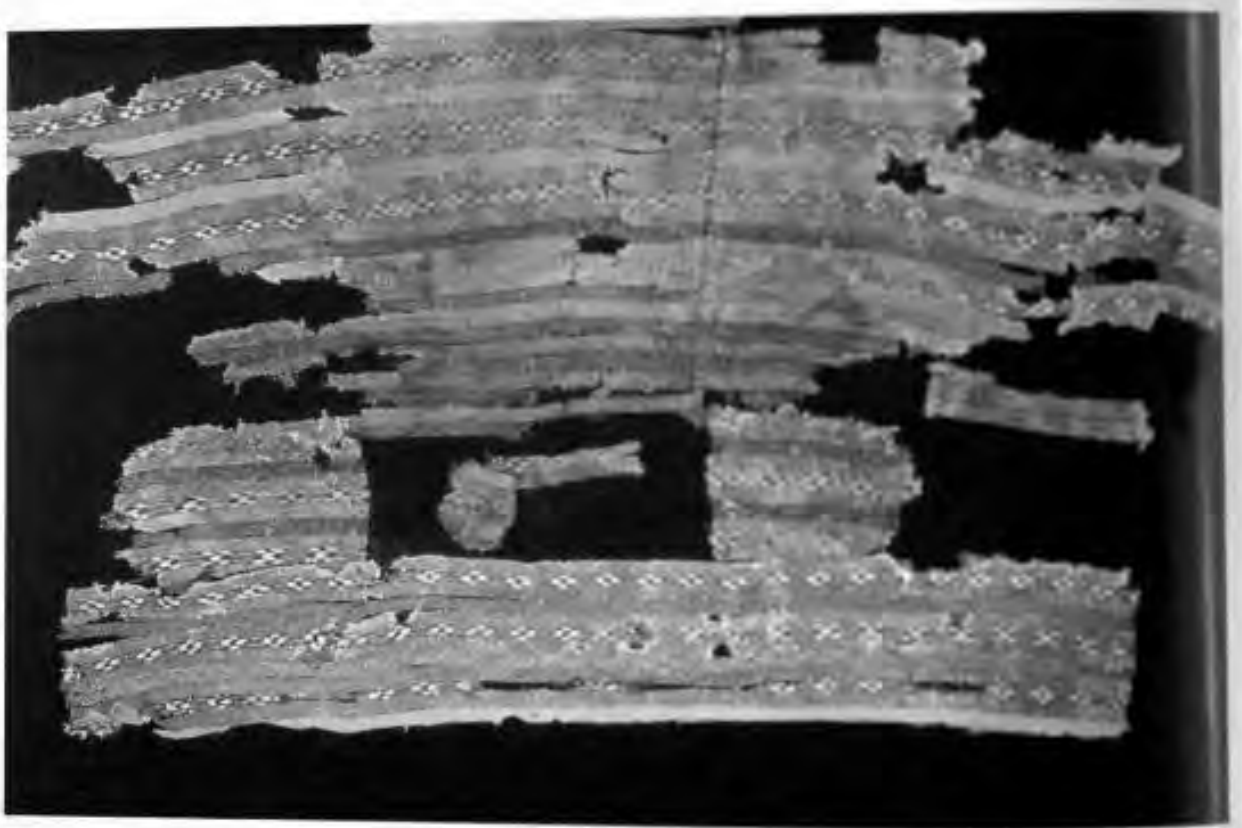


PLATE 64

Cloth made up of many narrow bands plaited of wool and sewn together, from Cherchen, 1st millennium B.C. Note how the ornate bands are spaced out with plain ones. (Photo I. Good.)

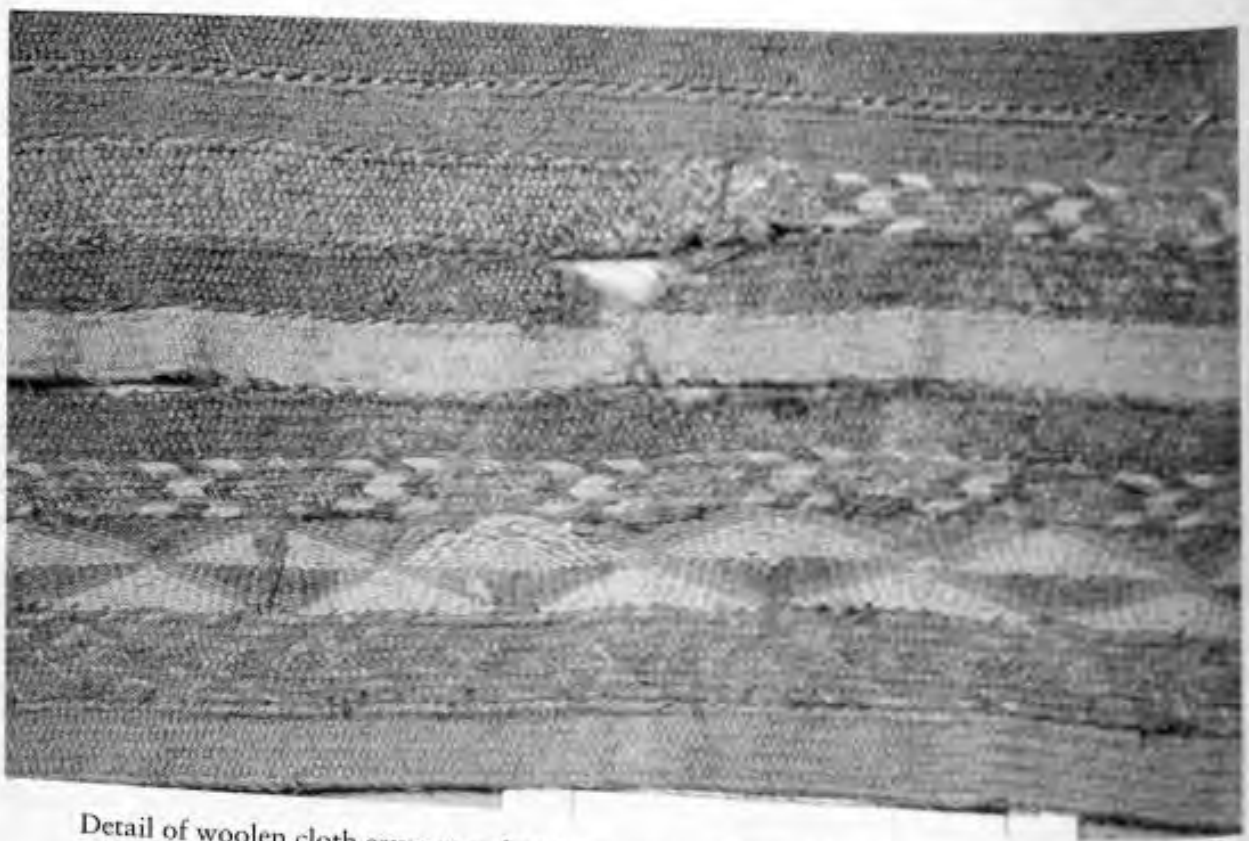


PLATE 65

Detail of woolen cloth sewn together from narrow plaited bands, found in Tomb 3 at Cherchen. Symmetry was not an issue: a blue band ekes out the length of a fancy band in one row. (Photo I. Good.)

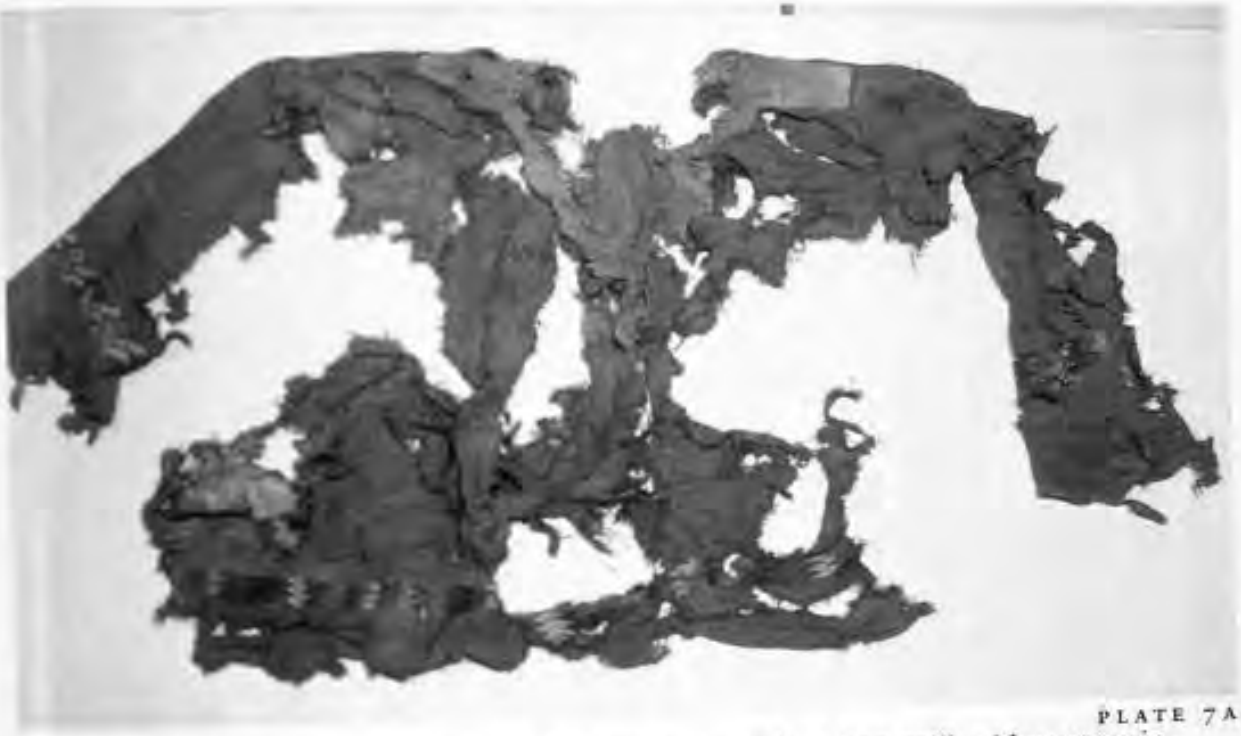


PLATE 7A

Turquoise blue woolen shirt from Cherchen, woven in long-hop twill, with tapestry in a 3-stepped jagged "lightning" pattern near the bottom, and spirals alternating with jagged "lightning" near the cuffs. The turquoise of the stepped collar is lighter than the body because its warp is peach pink rather than dark brown. 1st millennium B.C. (Photo J. Good.)

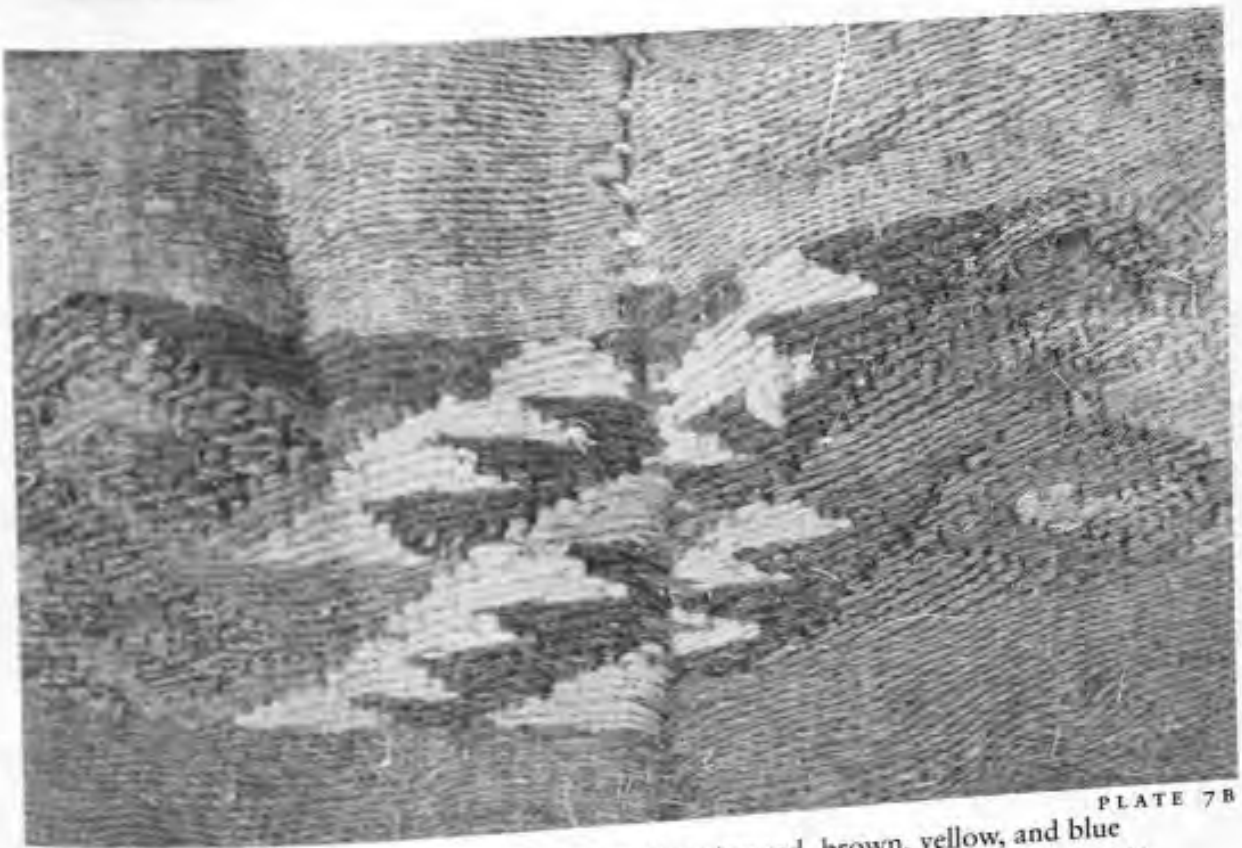


PLATE 7B

Detail of the turquoise shirt from Cherchen, showing red, brown, yellow, and blue tapestry design of spirals alternating with jagged "lightning" zigzags. (Photo J. Good.)

Detail of a painting from Cave 20 at Bezeklik (see plate 15a), near Turfan, ca. A.D. 900, showing Tokharian worthies donating trays of moneybags to a Buddhist saint. Note the reddish hair and pale eyes of the man at right, as well as the typically Caucasoid features of both (big nose, round eyes, heavy beard). The early mummies are of this same type, as are many of the current inhabitants of the region (see fig. 10.7).

steps as it goes, so that it forms a giant stepped cross. Another stepped patch was sewn over the main cloth under each arm. Yet there are no raw or sewn edges: the steps were sculpted on the loom—a tremendously time-consuming task.*

The polychrome areas of tapestry, again in long-hop twill and differing between hem and cuff, were the work of experts. Near the bottom of the chemise is a three-step jagged "lightning" pattern (of red, brown, yellow, and blue), whereas near the cuff of the inset sleeve (plate 7b) we found spirals alternating with jagged lightning shapes. People who don't have television and movies to entertain them may have a lot of time on their hands to create ornate things.

My favorite textile of all depicts a row of sassy-looking Argali sheep with big curving horns and large brown or bright blue eyes (plate 8a). Some of the sheep are white, some tan, and some red-brown, on a dark brown background, all perching above a red border and below a row of "hourglasses." They are done in brocade technique—that is, by covering the basic weft (that holds the cloth together) with extra weft threads in other colors to make the design. The Argali (commonly known by the Mongol word for "ram"; zoologists call it *Ovis ammon*) is the wild sheep of the area and the largest of all wild sheep, standing some four feet high at the shoulder and bearing impressive curly horns. I have not been able to find that it ever has blue eyes, and I wonder whether the weaver got that idea from the *people* of Cherchen. After all, someone had gone to the trouble of finding blue stones—something of a rarity—to place over the infant's eyes, and a remarkable number of the non-Chinese people in the Tarim Basin today have blue eyes.

This brocade was the only depiction of real life among all the Cherchen textiles, an attribute suggesting that it is a late piece. On the other hand, the simple brocade technique used is attested (in and around the Alps) as far back as 3000 B.C., the Late Stone Age.

Of the various remaining Cherchen textiles, three other pieces showed us something completely new. One was a grungy, rumpled scrap of dark brown twill with the remains of chain-stitched embroidery, the pattern of which was not readily distinguishable. In the ancient Near East embroidery was relatively late, developing only after millennia of decorating cloth with strictly woven designs. Apparently it was not an immediately obvious thing to do to cloth, al-

*The turquoise weft forms a closed selvedge at the bottom of each step as well as along the slit of the neck hole, and the peach-colored warp turns back into the shed at the side of each step—*at both ends.* But you can't weave thread into a shed that has already been closed! Unfortunately we did not have time to solve the riddle to our satisfaction, but my best guess is that at the finishing end they had worked the warp ends back into the cloth with a needle, doing it so carefully that you couldn't readily detect the difference.

though embroidery was starting to spread out of Mesopotamia and Syria by the time of Tutankhamon, ca. 1350 B.C. Embroidery seems to have started in China too by that time, chain stitch becoming a favorite Chinese stitch.

The second informative piece was a white cloth decorated with a simple but elegant pattern of little squares stacked and nested to make polychrome lozenges (plate 8b). At first glance it appeared to have an ancient mend, but the two edges joined by the stitching turned out to be closed selvedges, not torn edges. Someone had deliberately woven the pattern in such a way that the *interiors* of the lozenges would match up perfectly when seamed together—a feat that takes careful planning.

The third piece consisted of a strip of tapestry showing an interlocked scroll pattern in red, white, and blue that zigzags across the fabric (plate 10a). Its edge was sewn to a broad strip of red twill, with strips of green twill, brown plaiting, and dark yellow twill successively beyond that.

One detail in particular caught Irene Good's eye. A small section of the red scrolls in the tapestry consisted of a slightly paler and much silkier fiber than the rest. She eventually determined that it was cashmere, the fine hair of a type of goat named after its home in Kashmir, just north of India. This could account for the extra sheen Irene had noticed in the Cherchen Woman's handsome red dress. It also indicates that these people kept (or had access to) goats from the south as well as sheep from the west.

What caught *my* eye was its similarity, red twill sidebar and all, to some cloth found nearly seventy years ago at Pazyryk.

Pazyryk lies five hundred miles due north of Cherchen in the Altai Mountains, right where the steppe or grassland belt pinches to a narrow wasp waist between western Asia (Siberia) and eastern Asia (Mongolia) as the steppe zone passes through the one range of mountains that severely obstructs its east-west sweep (map 2.9). In a small Altaic side valley now called Pazyryk, nomadic herders of twenty-five hundred years ago laid their dead to rest in a group of kurgans, or burial mounds, some big and some small. Not long after, opportunists passing by noticed these conspicuous monuments, dug down into them from top center, and robbed the central burial chambers of whatever they viewed as valuable, objects of precious metal in particular.

High and northerly, however, Pazyryk lies in an area subject to subsurface permafrost. In some cases a few feet of groundwater had already seeped into the tombs and frozen so hard that the robbers could loot only the top half of the contents; the rest was stuck fast in the ice. And the conical holes that they dug funneled so much additional rain and snow straight into the interiors that everything else was soon encased in permanent ice as well.

Until 1929, when a Russian archaeologist named Sergei Rudenko came along

with hot water. Opening first one, then another of the largest kurgans in the group, he loosened the contents a bit at a time with buckets of water heated over a campfire. Slow though it was, the work was well worth the effort, for the ice had preserved wood, leather, textiles, and even the ornately tattooed skins of the dead, lying in their hollowed log coffins.

The inner chamber of Kurgan 2, built up of notched logs like Abraham Lincoln's hut, had been hung with great lengths of cloth, presumably in imitation of the winter dwellings of the nomadic herders who built the tombs. (As in medieval castles of northern Europe, where huge tapestries adorned the walls, the hangings would trap the drafty breezes and keep the rooms a good deal warmer.) But this was one of the tombs already half filled with ice when the robbers dug in, and the bottoms of the hangings were already frozen several feet into the ice. Apparently the intruders viewed this heavy cloth as valuable, for they tore off as much as they could get at. The rest remained for us. It consists of wide strips of red woolen twill alternating with equal-sized strips of tapestry patterned in red, white, and blue interlocking scrolls. In short, it bears the same pattern as the Cherchen tapestry, with the difference that the little scrolls and the zigzagging of the color fields were woven at right angles to the way they lie in the Cherchen piece.

So great are the similarities (not just of the tapestries but also of sewing them to strips of plain twill) that one has to believe the two textiles belong to the same date as well as to the same tradition. Tree rings show that the five great kurgans of Pazyryk were built within fifty years of each other, probably between about 480 and 430 B.C. That suggests a similar date for the scrolled tapestry and the grave it came from at Cherchen. But exactly where these scroll-patterned tapestries originate is not yet known. There is much still to learn.

In all our days in Ürümchi we never glimpsed the inside of the storeroom, so I had no idea at the time what percentage of the Cherchen finds we looked at or whether our sample was representative. The armloads kept coming as long as we had time to work. Later Dolkun Kamberi told me that we had seen maybe a fifth of the Cherchen material and that he had tried to see to it that we could inspect representatives of all the most interesting types of cloth. Undoubtedly, therefore, much plain stuff was passed over, but even so, these ancient people clearly dressed in a remarkably colorful way. The reopening of the Cherchen excavations in 1996 apparently has brought many more boxloads of colorful cloth to the museum.

Beyond that, we had little context for most of what we saw. The labels read simply 85 Q Z, meaning they had come from the 1985 excavations near the town of Cherchen—written *Qiemo* if you transliterate into Roman script the Chinese name of the place—at the little site called *Zaghunluq*. (I never asked

FIGURE 3.15

Ancient cemetery of the 1st millennium B.C. at Subeshi, near Turfan, in the Toyuq Gorge of the Flaming Mountains (Qizil-tagh; so named because everything is red-brown). The cemetery was originally flat, with no grave markers; the low mounds are debris and fill from graves beside them, dug up largely by local people.

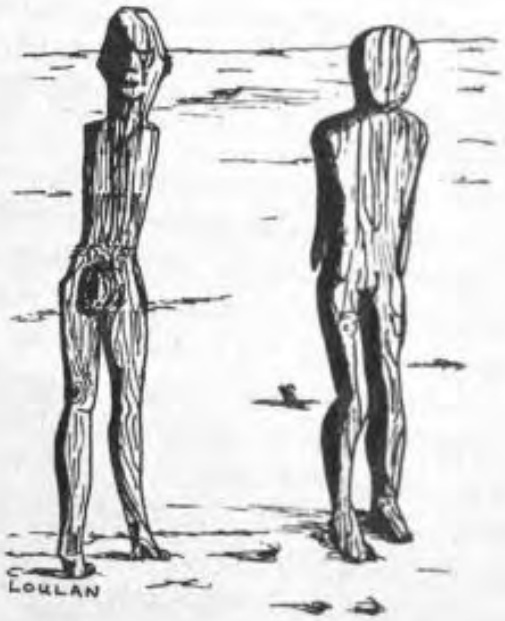
why they used Roman letters on their labels when Uyghur has now reverted to the Arabic script and Chinese uses its ancient system of word characters.) Those that I have described as coming from particular graves had the additional indicator *M* (for *mù*, the Chinese word for a grave) plus the number assigned to the tomb, and often yet another number that normally indicates that this was the *n*th thing retrieved from that spot. So, for example, the textiles we saw from Tomb 4 all had *source* labels reading *85QZ M4*, but seven stopped there while others continued with the *find* numbers 6, 22 (three labeled "22"—all of similar but not identical red cloth), 50, 57, and 59. Remembering that the salt diggers had thoroughly ransacked Tomb 4, we can surmise that the pieces without find numbers lay about the surface, while the others came from more nearly their original positions in the burial. Even so, what we saw included only five of at least 59 numbered finds—not necessarily all or even mostly textiles, to judge by the mats, animal bones, etc. included in Cherchen Man's tomb.

Lack of context destroys much of the historical value of an object. Unscientific digging of archaeological sites has long been a problem worldwide, wherever the contents have been perceived as having value. (At Pazyryk intruders were robbing tombs by 400 B.C.; in Egypt the process had begun by 2500 B.C.) During our trip we visited a somewhat later cemetery site, dating to about 500 B.C., where nearby villagers had looted many of the remaining graves the minute the Ürümchi archaeologists left for the season. The place looked like the warren of a colony of ground squirrels: mounds and holes everywhere (fig. 3.15; map 10.2). And all about lay finger and leg bones, a jaw here, a pate there—old bones had no value to the robbers, so they chucked them everywhere. The archaeologist accompanying us, who had dug the site originally, climbed down eight feet into one of the pits where you could see more bones protruding and gently dug out the long hair and netted cap of the woman who had once occupied the grave. As he handed things up, we bagged them, and he told us that his team had found one gold earring and two gold beads in this cemetery, while excavating a dozen graves. On the strength of that, the locals had spaded up twenty or thirty more, and might have dug all the way to Ürümchi if they had found real treasure.

Whether they found any more gold, and whether they viewed anything else as valuable enough to keep or sell, we'll never know. Almost every site that archaeologists begin to dig, not just in China but the world over, runs the risk of being ransacked while the scientists aren't looking. But without the human cultural context, the central value of all the material—gold and bones alike—is lost forever. For understanding human history ultimately carries far more value than little bits of shiny metal. As Santayana said, those who do not know their past are condemned to relive it . . . unimproved.

of these forgotten people (plate 16), with their often light brown beards and elegant mustaches, their blue eyes and white skin, proudly donating bags of money to the Buddhist monasteries for good works. Musing on their fortune, Roerich wrote into his diaries: "So, before the eyes of history has come a nation, from whence is unknown; nor is it known how it scattered and disappeared without a trace."

The mummies lying in state in Ürümchi are making that story known again. And Dolkun, pointing to his own Caucasian face and pale brown hair, answers when his audience asks why all those early Caucasians disappeared: "We are not gone—we are still here. . . . *I* am still here!"



Notes on Sources

FIVE OF the color photographs—plates 1, 5a, 9, 10b, 11a—were taken by Jeffery Newbury/©1994 and reprinted with permission of *Discover Magazine*.

For complete bibliographical information, see the Bibliography. What follows is a list of specific page references to the sources of quotations, drawings, and other information, together with some brief explanatory descriptions of sources that may be helpful to the curious reader.

CHAPTER 1

Evan Hadingham's April 1994 *Discover* article "The Mummies of Xinjiang" includes full-color photographs by Jeffery Newbury. Victor Mair's article in *Archaeology* "Mummies of the Tarim Basin" (1995) also contains some of Newbury's photos (printed backwards) as well as some of Mair's. In 1996 *National Geographic* published Thomas Allen's article "Xinjiang," including in its last section, "The Silk Road's Lost World" (pp. 44–51), Reza's photos of some of the mummies, sites, and artifacts.

Konrad Spindler tells the story of the prehistoric Ice Man, found mummified in an Alpine glacier in 1991, in his book *The Man in the Ice* (1994).

For the origin and development of textiles as a key industry in early times, see my two earlier books: *Women's Work—The First 20,000 Years* (1994) and *Prehistoric Textiles* (1991). The latter also gives a full account, with photographs, of the ancient European plaid twills (pp. 166–69, 186–95).

CHAPTER 2

The slashed cloak from Gerumsberg, Sweden, is further described in my book *Prehistoric Textiles*, pp. 192–94, with references to the original Swedish publications.

Dolkun Kamberi describes the excavation of the Cherchen site in English in a short, illustrated paper, "The Three Thousand Year Old Chärchän Man Preserved at Zaghunluq" (1994). The man's tomb, Tomb 2, is described in detail on pp. 5–7, and diagrammed on pp. 9–12. The quotation about the spoons with ocher comes from p. 6. Zaghunluq and its setting are described on pp. 2–4.

I describe the economic place of textile crafts in the prehistoric and Classical world in *Women's Work—The First 20,000 Years*.

Further discussion of both knitting and *nalbinding* can be found in Richard Rutt's *A History of Hand Knitting* (1987).

Drawings of some of the hats (figs. 2.6, 2.7 right; 2.8 left) are based in part on photographs in *The Ancient Art in Xinjiang, China* (1994), no. 253–54. (A photo of Cherchen Man's white overcoat occurs there as no. 255.) The Phrygian hats in the center of fig. 2.8 come from scenes of the Judgment of Paris, in which Paris is typically tagged as coming from Anatolia, not Greece, by having Phrygian headgear. The upper head is found on an engraved Etruscan mirror in the Louvre, Paris (Br 1734); the lower head is on a painted Roman relief in the Tomb of the Pancratii, Rome.

For early domestic horses and tooth wear at Dereivka, see David Anthony and Dorcas Brown, "Looking a Gift Horse in the Mouth" (1989). A recent overview of the whole question, with a photo of the Dereivka skull, appeared in the *Los Angeles Times* (1995) in "Scientist Trots Out New Equine Theory," by M. Mycio. Henri Moser, a Swiss adventurer of a century ago, recounts many interesting firsthand observations of the dynamics between impoverished herders and farmers of Russian Turkestan in his fast-reading book *À travers l'Asie centrale* (1885).

For theories of perturbations on the steppes, see the introduction by Christopher Dawson to his edition of descriptions of *The Mongol Mission* (1955), p. ix.

An early Egyptian shirt purportedly of the First Dynasty was published by Sheila Landi and Rosalind Hall in "The Discovery and Conservation of an Ancient Egyptian Linen Tunic" (1979); other early sleeved shirts appear in Hall's article "Garments in the Petrie Museum of Egyptian Archaeology" (1982). See also my books *Prehistoric Textiles*, pp. 146–48, for the Egyptian shirt, and *Women's Work*, pp. 134–37, for discussion of the history of sleeves in early times.

My thanks to Joe Rhode of Disney Studios for letting me examine his Tibetan wool coat.

Fig. 2.14 is based on Dolkun Kamberi's descriptions and diagrams in "The Three Thousand Year Old Chärchän Man Preserved at Zaghunluq."

CHAPTER 3

Dolkun Kamberi describes the burials of both the women and the baby in his excavation summary, "The Three Thousand Year Old Chärchän Man Preserved at Zaghunluq," pp. 4 and 6. Figure 3.1 is based on his diagrams on pp. 9–12.

William of Rubruck's wonderfully observant memoir of his Asian travels, written for Louis IX of France (St. Louis), has been translated by Christopher Dawson as part of his book *The Mongol Mission*. The quotations on felt come from pp. 101 and 94. I also present a discussion of the history of felt, with further references, as Chapter 9 of *Prehistoric Textiles*.

The felt, textiles, and other finds at Pazyryk, now housed in the Hermitage Museum

at St. Petersburg, are fully described and well illustrated by Sergei I. Rudenko in his tome *The Frozen Tombs of Siberia* (1970). Fig. 3.3 is based on fig. 59 of the original Russian edition of 1953, which is clearer than its nearest equivalent, fig. 31, of the English version. A photograph of the carved Cherchen spindle, serving as a principal source for fig. 3.4, appears as fig. 218 of the catalog *Rāran ōkoku to yūkyō no bijo* (1992).

The films of Bosnian folklife were made as part of a documentary series by Ankica and Vatko Petrović for Sarajevo television. Dr. Ankica Petrović is a noted ethnomusicologist; her husband directed Sarajevo TV for many years. Since the films were made, most of the age-old lifestyles that they tried to record have been destroyed by the latest Balkan wars. Only a few of the films themselves survived, brought to the United States by the Petrovićes as cultural treasures.

My thanks to Elizabeth Ettinghausen for letting me reproduce a portion of the Persian wedding painting, fig. 3.9, in her collection.

For plaiting techniques Noémi Speiser has collected a wide variety into her book *The Manual of Braiding* (1991), including the balanced ribbing technique (which is what many of the ornate flat bands appear to be) and *kumihimo*. Several books on making *kumihimo* exist—for example, *Creative Kumihimo* by Jacqui Carey (1994). Fuller details of the Aegean weights suitable to making *kumihimo* cords and other evidence of cloth made up from narrow bands in that area are set out in my article "Minoan Women and the Challenges of Weaving for Home, Trade, and Shrine" (1997). My thanks to Paul Barber for crafting the *kumihimo* stand seen in fig. 3.11 and to the Art Department at Occidental College for providing me with the clay and work space to make the weights.

Discussion of what we know about embroidery before 500 B.C. can be found in *Prehistoric Textiles*, pp. 159–62, 198–200, 203, etc. The earliest-known brocades, from the Swiss pile dwellings, are discussed on pp. 134–40.

Irene Good presents her analysis of the cashmere fibers, with a photomicrograph (fig. 1), in "Bronze Age Cloth and Clothing of the Tarim Basin: The Chärchän Evidence" (1998).

I published a color photograph of the scrolled tapestry from Pazyryk in *Prehistoric Textiles* (plate 4, right), and a drawing and discussion of its design appear in Rudenko's *The Frozen Tombs of Siberia*, plate 157A–B and pp. 204–05. *Scientific American* also published a short article on this key site in 1965: "Frozen Tombs of the Scythians," by M. I. Artamonov.

CHAPTER 4

Map 4.1 is based on maps 25–26, 29–30, and 32–33 found in Sir Aurel Stein's *Innermost Asia* (1928, vol. 4), and on fig. 36 (p. 163) of Folke Bergman's *Archaeological Researches in Sinkiang* (1939). Stein's excellent, detailed maps are the best maps of the Tarim Basin readily available in the West still today.

The reconstructed portrait of the Loulan "Beauty" is reproduced on p. 51 of Thomas Allen's article "Xinjiang."

Tamar Schick, an Israeli archaeologist interested in prehistoric weaving, published a comb with such wear marks in the article "A 10,000 Year Old Comb from Wadi Murabba'at in the Judean Desert" (1995).

The domestication of einkorn in the Early Neolithic has just been pinpointed through DNA to where the Fertile Crescent crosses the Euphrates; see Manfred Heun et al., "Site