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Author(s): Virginia Greene
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MOUNTING ETHNOGRAPHIC FEATHERWORK ON MANNEQUINS: AN EXOTIC EXERCISE IN COOPERATION

Virginia Greene

In November of 1991, the University of Pennsylvania Museum opened a major exhibit titled "The Gift of Birds: Featherwork of Native South American Peoples". The exhibit included approximately 300 accessioned objects, twelve stuffed birds borrowed from the Academy of Natural Sciences, over a dozen items on loan from curators and consultants, and approximately forty reproduction objects of varying kinds. The exhibit plan also included twenty full-size realistic human figures, seventeen arranged in three dioramas representing ceremonies in which feathered objects play an important role, and the remaining three in individual cases.

The three major groups represented were the Waiwai of Guyana (British Guiana when the objects were collected in 1913-16); the Cashinahua of Peru (the collection made in 1965), and the Bororo of Northern Brazil (1930). The exhibit also included archaeological material from the Andean highlands which was made of or included feathers or represented birds (or both); this material was excavated or purchased by Max Uhle in 1896. Most of the specific examples in this paper relate to the Waiwai scene, which was the first we worked on and the most complex.

As usual, every object in the exhibit was examined by the conservator, photographed, and a condition report and treatment proposal written. The curator and conservator then discussed the extent of the conservation work which would be necessary and/or desirable.

Many of the objects required small structural repairs to secure loose beads and feathers, reinforce fragile support cords, or repair broken elements. The major conservation problems all involved archaeological objects for case display, but we did have to humidify and reshape some armbands for the mannequins. Cleaning was kept to a minimum, and restricted to those objects which clearly had post-collection dirt and grime. The only major cleaning was done on strings of plumose eagle feathers that formed parts of the Waiwai headdresses. This was the only occasion on which there was any real discussion about the extent of conservation, and the only time when the conservation lab was under pressure to do extensive cleaning which involved potential damage to the objects. The curator made it clear that the people involved would never have worn dirty feathers in their headdresses, especially for an important occasion, and the feathers had clearly acquired most of their dirt while in the museum. There turned out to be no possibility of borrowing suitable pieces, and we had other feather strings that would remain uncleaned. Vacuuming was totally unsuccessful, and in the end the feathers were wet-cleaned with Igepal non-ionic detergent and deionized water, and rinsed repeatedly. They were then blotted between paper towels and blown dry (a necessity for plumose feathers) using a cool air stream from a hairdrier. The results were more successful than we had hoped as far as appearance was concerned, but there were certainly some losses; this is not a treatment that we would normally recommend.
Conservation treatments, however, were not our greatest problem. Previous exhibits at the Museum had included torso mounts for clothing and an occasional full-size mannequin; most were prepared by the exhibits department and all were dressed by the conservation staff. In every case the clothing concealed all or most of the mannequin or mount, including all the padding and supports needed to safely display the objects. Twenty figures, to be dressed primarily in a few delicate feathered and beaded items (which allowed little or no room for concealment of the mounting technique), was going to be a new experience.

Owing to time constraints, the figures could not be sculpted, but had to be made from body casts taken off live models. To allow mounting of objects such as armbands and belts that were closed circles, some of the figures had to be jointed. In order to establish the exact position of the joints, ensure that the poses were correct and objects held in the hands would fit, and that all the objects would have the proper appearance on the finished figures, everything to be mounted on the figures had to be test fitted on living models before the mannequins were made. The models were primary Asian students at the University of Pennsylvania (chosen for age and body type; the faces were slightly altered on the mannequins where a model was used more than once); a Museum volunteer was the model for two older male figures.

Needless to say, the whole process of test fitting produced great anxiety in the conservator. However, the trial fittings were eventually accomplished without damage to a single object, and the experience pointed out, at a very early stage in the preparation of the exhibit, both curatorial and conservation problems that might not have been fully appreciated for months.

Before the trial fittings on the models, structural repairs were completed for the pieces that would be exhibited on mannequins. Many of these pieces also required time-consuming temporary supports. Bracelets, anklets, and some belts had to be sewn on to cotton twill tape (Figure 1). Ear pendants were provided with loops of cotton string, so they could be hung over the ears of the model and rest in the appropriate position (Figure 2). A temporarily missing frame for a headdress was constructed out of mat board.

Objects which could not be test fitted, but which were suitable for later mounting on a mannequin, were identified. These included, for example, a belt of jaguar skin in good condition but very stiff, which would later be humidified and shaped to the waist of the figure.

It became immediately clear that some items of clothing, such as loincloths worn by the Waiwai men, could be used neither on the models nor on the mannequins. In addition to the unacceptable risk to the objects themselves, the real ones from our collection were much faded, as the loincloths had to be periodically re-dyed to maintain the appropriate color. This early identification of pieces which would require reproductions, either because they could not be safely exhibited on the mannequins (such as the loincloths) or were not available
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(multi-strand bead necklaces, and some earrings from both the Waiwai and Cashinahua), was one of the most valuable benefits of the process, especially as neither of the curators had originally considered the possibility, never mind the necessity, of using any reproductions other than for food items.

A mockup for a reproduction loincloth was prepared, complete with fringe which could be tied in the traditional manner and onto which small feather strings could be tied, exactly as had been done on the originals. (The collection included an ample supply of these small feather strings, which were removed during redyeing and when the loincloth was eventually discarded.) It turned out that even if we could have used some real loincloths, we would have needed one reproduction: when we dressed the seated figure in this scene we discovered that the loincloth had to be cut into two pieces to be put on the mannequin. We had a similar problem with bandoliers made from multiple loops of braided cord: the originals were faded and were slightly too small to be put safely on the mannequins.

For the most complex scene (the Waiwai), all of the models were brought to the museum for a first session, to set the poses. After this, the models generally came in individually, accompanied by the sculptor (then teaching in the Fine Arts Department at Penn) who would make the body casts and assemble and paint the mannequins.

The objects were handled only by the curator and conservator, and pieces which could not be safely put on the model were simply left off (Figures 1-4, 17). The sculptor took numerous photographs of the individual models, and of pairs or groups when they were touching (Figure 2). He also took notes on where figures would be jointed and on any special requirements (e.g. tight binding on legs and arms where bead strings would later be wound). We also considered the problem of the placement of support rods for those figures to be "sitting" on stools (standing figures had rods up the legs), taking exact measurements of the stool height and dimensions of the seat as well as photographs that would approximate the way in which the figure would be seen when on exhibit (Figure 3).

Casts were made in the sculptor's studio, with plaster and bandage applied in sections. When the sections were finished, they were assembled into figures (Figures 5-8).

When the mannequins were finished, they were brought to the Museum. (Finding a place to store 20 life-size human figures for nine months was no small problem.) Before the figures were painted, they were assembled into scenes and we did a second trial fitting for objects which presented particularly critical mounting problems, such as headdresses, closed-circle armbands and items held in the hands (Figure 9). Any needed adjustments were made in the figures: the most complex involved redoing a woman's arm which was supporting a tray, which was at the wrong angle; the size of some heads had to be reduced so headdress would fit easily. The figures were then painted and allowed to dry for several weeks before they were dressed (Figure 10).
At the same time we were considering mounting methods for specific objects. The wristlets and anklets, which are very light in weight, would be hung from a series of small stainless steel pins painted the same color as the skin, with the original cords tucked out of sight. Extra support cords made of synthetic sinew, running parallel to the original cords, were used to carry the weight of some belts and necklaces. Beaded hip pads, and some belts worn over loincloths, would be tacked down directly to the reproduction loincloths with sewing thread when the figures were dressed. The most elaborate mount was a complete sewn backing for a heavy beaded apron with hook-and-loop fastener along the upper edge for mounting; the other part of the tape had to be recessed into the body of the mannequin so the apron would hang properly (Figures 11, 12). The other heavy aprons were on seated figures and so could be draped over their laps, with a piece of felt between the object and the figure and the cords loosely tied in back (Figures 2).

Fabricating the reproduction objects turned out to be one of the most time-consuming parts of the preparation for this exhibit. The Exhibits Department bought fake banana leaves which were used in several places, and made a large papier-mache "tortilla" that was held by one of the figures (Figures 12). One of the consultant anthropologists made a shallow woven tray for the Bororo scene. All of the other reproductions - clothing, food, and other objects - were made by the Conservation Laboratory. By the time the exhibit was completed, almost half of the total lab time had been spent designing, acquiring the materials for, and manufacturing the reproductions.

The loincloths were sewn from cotton fabric purchased from Testfabrics, selected to match the original as closely as possible. The bandolier cord could not be matched exactly, but we found some heavy woven cord at an upholstery supplier that looked acceptable. The loincloths and bandoliers were dyed (with household dyes) to a color (described by the consultant as approximately the same as some of the red-orange feathers) and achieved by several days of tests. The original bandoliers could not be taken apart, so the elaborate feather bundles (including full birdskins) attached to them were tied to the reproductions, with the original bandolier cords hidden under the birds (Figures 13, 14).

We did not have enough pairs of shell earrings for the Waiwai figures; nor were any of the ones we had in sufficiently good condition to use directly on the figures (Figures 15). Moreover, because of the rigid plaster, it might have been very difficult to get the earrings in the correct position. Instead, we made the "shell" of Sculpey modeling material painted with iridescent Liquitex acrylic paints, with a small section of bamboo stick (which would go through a hole drilled in the ear) stuck to the back with soft wax (Figures 16). This arrangement enabled us to adjust the angle of the earring to compensate for the plaster and for oddly drilled holes. As the original earrings were all made in two parts, the shell and stick part described above, and the bead and feather ornaments which were tied to them, we were able to use the original ornaments.
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We also had to make reproduction earrings for the Cashinahua women: multiple strands of white seed beads with a large black "seed" (actually a wooden bead) on the end of each strand. These were worn by inserting a thin cord directly through the ear, and the holes were easily drilled after the mannequins were finished.

The Waiwai also wore long strings of seed beads wound around their arms and legs, and several had multi-strand necklaces made of seed beads (Figures 18). These were not part of our collection, either because the people had not wanted to part with them or - in the case of the strings - the ethnographer had not seen them as "artifacts". The Assistant Curator and I took a trip to New York to purchase beads, all of which had to be restrung (as the threads they are sold on are very fragile) to make three multistrand necklaces and yards (and yards) of single strands of white and blue beads. Fortunately, we were able to draft some volunteers to help with the stringing.

Several of the figures wore ordinary men's shorts (The Cashinahua scene was set in 1965, and the Bororo in 1971). We could not get the exact style, but we purchased acceptable substitutes at a discount store. The legs were shortened according to the instructions of the consultants, and the shorts were washed several times and then dragged around the lab floor and stepped on until they looked sufficiently worn. We needed a modern dress for one woman in the Cashinahua scene; the consultant provided photographs to show the style, and described the fabric ("cheap cotton with little flowers"). The husband of the Assistant Curator, who happened to be going to Bolivia during the time we were working on the exhibit, offered to purchase fabric for us in a street market. He came back with white cotton fabric printed not only with little pink flowers and green leaves, but also small red penguins. (The consultant refused to try to explain the significance of the penguins, but approved the choice). After we stopped laughing, the fabric was tea dyed to soften the bright white ground; the dress was cut using a modern pattern sized to the model for this figure, partly assembled, and then finished directly on the mannequin.

Pieces of leaf-wrapped 'meat' in a tray were made from small pieces of Ethafoam wrapped in fake banana leaves and secured with toothpicks (Figure 12). One Waiwai chief was holding a bowl with a ceremonial drink (Figures 17, 18). We did not have a suitable bowl in the collection and were fortunate in being able to borrow one from the consultant, who also gave us permission to do as we wished with it. After getting a description of the liquid, we filled most of the bowl with chunks of Ethafoam and poured silicone molding material over the top. This looked perfect and was easily removed at the end of the exhibit without damage to the bowl.

For the Bororo scene, we needed a gourd bowl used for body paint, and a roughly woven tray to hold feathers. The consultant made the tray from dried palm fronds and lent us some loose feathers; her mother sent the proper type of gourd from Brazil. We froze the gourd to dispose of any possible insect life, then cut it into a bowl and filled it with plaster tinted to the right
color for the body paint, artistically dripped over the side. We also needed a jaguar skin for this scene, as the curator discovered rather late that the ones in the collection were not suitable. Unlike gourds, this is not something one can now acquire, and the lack of time made searching for a potential lender a problem. Fortunately, the curator actually owned one (purchased many years ago, when it was still legal) which was the perfect size, and was willing to lend it for the exhibit.

When the figures were painted, the basic construction for the dioramas finished and the backgrounds painted, the figures were placed in the cases and the base plates secured to the floor (Figure 19). The figures were then removed, and the floor finished with plaster, Fiberglas chopped-strand mat, acrylic paint and that ever-useful material, kitty litter.

In the meantime, the wigs were styled. These were ordinary modern wigs purchased by the Exhibits Department and styled by the exhibits staff using ethnographic photos and advice (mostly unsolicited) from the curators, conservator and other staff members. Most of the Waiwai men had long hair which was tightly bound with fiber strands (we used synthetic raffia) and inserted into a decorated bamboo tube; as the tubes were accessioned artifacts these hairdos were done by the conservator (Figure 14).

To minimize handling and movement of the objects, the mannequins were dressed in the gallery, one scene at a time. Modern shorts and loincloths (if any) were put on first, and the figures then put into position on their support rods before the rest of the objects were attached. Extra objects for the scene were then added, along with finishing touches such as down in the hair (supplied by the conservator by sacrificing a bit of insulation out of a winter coat, to avoid buying a whole package of down).

As we were dressing the figures, we had a last-minute crisis as it became clear that we would have to make several reproduction armbands. Although the real armbands fit properly in the depressions that had been molded into the arms of the mannequins, on two figures we could not insert the large upright feather fans at the correct angle because we had not fully allowed for the fact that plaster, unlike flesh, is not compressible. We considered removing some plaster, but were concerned that we might not be able to finish the job properly if it were not immediately successful. Instead, the real armbands with their dangling feathers were put in place, and reproductions of just the bands made to fit over the originals, with an internal support system of narrow channels for the long feathers of the fan. The reproductions had to be flexible enough to wrap around the arm, and have the appearance of the palm leaf used to cover the originals. After some experimentation they were made of 2-ply archival matboard covered with untwisted paper craft tape (Figure 20) which was tinted with acrylic paint. Thin dark cords on the original were made with tightly twisted pieces of raffia. The matboard was flexible enough to wrap around the arm, and the overlap was secured with adhesive and monofilament ties. The crinkled paper tape, dyed brown, was also used to make a reproduction bark fringe for a headdress that had lost most of its original bark - the new
fringe was not attached to the headdress but just secured to the head of the mannequin and the headdress put on top.

When the curators, exhibit designer and conservator were all satisfied, the case was locked and work started on the next scene. As the scenes were completely enclosed (one of the conservator's original non-negotiable demands), the figures were protected against dust generated by the installation of the remaining parts of the exhibit. The three big scenes each had a tiny door that allowed us to go in and out while the figures were being dressed. The single-figure cases each had a side that came off, but two of the three cases were too small for a person to get inside with the mannequin, making the job rather more difficult than expected. When everything else was finished, the conservator and head of the Exhibits Department did a lighting check, adding screens to the fixtures and refocussing lights.

This exhibit certainly qualified as a Cecil B. DeMille production. In addition to the normal cooperation among the conservator, the exhibits designer and his staff (both permanent, including mountmaker and graphic artist, and temporary, including carpenters and background painters), the curators (two for this exhibit, plus an assistant to the senior curator who did research, helped move objects and kept track of everything), the Publications Department (we published a volume of essays related to the exhibit) and the Public Information Office, we also had three academic consultants (one for each of the main peoples represented), two technical consultants (an ornithologist to identify the feathers and a malacologist to identify shells decorating some objects), the Assistant Registrar for Loans (because of material on loan from another museum, one of the curators and two of the consultants), the sculptor and his assistant, and the models. Also involved (albeit peripherally) by the time the exhibit was put together were the Assistant Curator's husband (who bought fabric in Bolivia), an expert in silicone molding materials (for advice on the silicone pretending to be a ceremonial drink), the owner of a bead shop in New York (who spent a lot of time helping us find the right beads for reproduction items), the mother of one of the consultants (who sent a gourd from Brazil) and a number of patient volunteers who helped string thousands upon thousands of seed beads. We confidently expect future exhibits to be a piece of cake.

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Author's Address

Figure 1. Model for a Waiwai figure, wearing a mockup for a reproduction loincloth, and real feathers. The ankle and knee ornaments have been temporarily sewn onto twill tape. The lip plug is attached with masking tape.

Figure 2. Model for two Waiwai figures. The ear pendants are hung on loops of cotton string. Bracelets and anklets have been stitched to twill tape.
Figure 3. Model for a Waiwai figure. The right-hand armband, not yet conserved, was too distorted to fit on the arm. The model is sitting on a suitcase which is the same height as the real stool. The finished mannequin is shown in Figures 14 & 19.

Figure 4. Model for a female Waiwai figure. The apron (see Figures 11 and 12) is temporarily sewn to twill tape. The completed figure is partly shown in Figure 12.
Figure 5. Applying plaster and bandage to a model. The mold and cast are made in sections.

Figure 6. Applying plaster and bandage to a model.
Figure 7. Sections of a cast before assembly.

Figure 8. Assembled figures. Note the jointed arms on the male, and the depressed area to accommodate the armband. The narrowed area on the arm of the female is for strings of beads to be wrapped around the arm.
Figure 9. The Waiwai mannequins assembled into the scene. The sculptor is marking an area that has to be filed down so that the headdress will fit.

Figure 10. Mannequin with the skin and features painted, getting his body paint. The jointed arms have been removed.
Figure 11. The back of the heavy beaded apron shown in Figure 4, with its full backing and velcro for suspension.

Figure 12. The apron mounted on the mannequin.
Figure 13. Original bandolier, with a set of braided loops and a complex pendant of birdskins and feathers.

Figure 14. Finished Waiwai mannequin. The main support is an iron bar (see Figure 19) but the figure appears to be sitting on the stool. The bandolier (Figure 13) has been hung from the new cords.
Figure 15. Waiwai earrings. The shell disks have separated from the resin, which is crumbling.

Figure 16. Reproduction earrings, made from Sculpey polymer clay, bamboo sticks and soft wax.
Figure 17. Model for a Waiwai chief holding a bowl with a ceremonial drink. The position of the hands are adjusted by the curator, using a vessel with the same size and type of base as the real bowl. See Figures 18 and 19.

Figure 18. Several completed mannequins. The central male figure wears two reproduction multi-strand necklaces.
Figure 19. Completed figures in the Waiwai scene, before dressing. The support rod for the seated figure can be clearly seen.

Figure 20. Two brands of craft paper tape. We used the one on the left, which had a more appropriate appearance, and was thicker and easier to handle.