

# Japanese tissue paper: some uses in osteological conservation

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**Abstract** Japanese tissue in its various grades, weights and types has been used in paper conservation for hundreds of years and has gained some popularity in the repair of taxidermy specimens in the last decade or so (e.g. Moore, 2007). However, not much has been published about the use of this material in the conservation of osteological specimens even though it has several applications. For example when used in the repair of breaks in bone with an appropriate conservation adhesive, it can help to add greater strength to the join than adhesive alone. It can also be used as a gap-filling medium, for modelling-in small areas of missing bone and for backing fragile but important labels removed from specimens to provide long term support. Adhesives that have been used successfully with Japanese tissue paper include Paraloid B72, polyvinyl alcohol and neutral pH PVA adhesive (all reversible).

**Example 1: Repairing a broken orangutan skull.** The rear of this skull had been badly broken and although the pieces were wired together, many were still loose and one large piece was detached. Also, the skull attached to the rest of skeleton simply by being placed on the end of the vertebral rod from which it dangled precariously. This meant that the weight of the skull was taken by the broken pieces that were loosely wired together. The skull was repaired with Japanese tissue paper and neutral pH PVA adhesive, applying it within the breaks and to the inside of the skull across the joins. Gaps where fragments were missing were filled with the Japanese tissue and adhesive and when this dried it did not need to be painted out as it was such a similar colour to the bone. Significant gaps were filled in this way. This made the skull so robust that the wires could be removed.



**Example 2: Gap-filling and modelling to join pieces of a Moa skull.**

This Moa skull (above) was in two pieces without any clear join (in fact possibly from two different individuals). The two halves were attached together using Japanese Gampi tissue with neutral pH PVA to join the pieces and then the missing areas of bone were modelled-in using the tissue. The tissue was then painted with artists acrylic paints to blend in. The mandible was partially broken at the symphysis and this was repaired with Paraloid B72 and gap-filled with a small amount of the same tissue and Paraloid B72 adhesive to ensure a good bond.

**Example 3: Rebuilding a large Aepiornis egg.** Consisting of over 120 fragments from more than one original shell this specimen (right) had collapsed and many pieces were separate. It was previously held together with photocopy paper and old brown parcel paper glued to the inside of the shell. These materials were removed and the egg completely rebuilt, backing the pieces internally with Japanese tissue and neutral pH PVA adhesive with thin wooden skewers inside for extra support.

*Left, the orangutan skull before and after repair. Below, gap filling holes in the orang-utan skull (before & after). Right, Aepiornis egg before and after reconstruction. Above, the Moa skull before, during and after joining together the bones and modelling-in missing areas.*



**Discussion and Conclusions** Japanese tissue paper is a very versatile medium used in a variety of ways with a range of adhesives in art and paper conservation, taxidermy conservation and now increasingly in osteological and palaeontological conservation and preparation. Some palaeontological preparators use Japanese tissue impregnated with Paraloid B-72 as a temporary or permanent strengthening facing or backing to fragile bone (as a 'bone bandage') or as a heat-adjustable armature for a repair (Vital et al, 2013). Many different 'gap filler' materials have been used over the years but different fillers are suited to different tasks and some comparative studies have been undertaken (e.g. Larkin and Makridou 1999). It would be safe to assume that gaps filled with Japanese tissue paper and adhesive should not be relied upon to take a great deal of weight until specific weight-bearing tests have been undertaken. However, Japanese tissue impregnated with adhesive and then pulped for use as a gap fill or used in sheet form to structurally support small or wide gaps including where there is limited or no contact between joins – or both techniques, as required – can make a very strong repair. Adhesives regularly used include: neutral pH PVA adhesive; polyvinyl alcohol and Paraloid B72 adhesive (the latter at 10 to 50% in ethanol or acetone solutions.)



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## References

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