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Research and conservation of human remains: cross contributions

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Human remains and mummies represent specific collections. They raise important questions today about conservation and restoration ethics. The human dimension has to be primary, which means dignity and respect to the body. Restoration and research are complementary and if they give the opportunity to increase, in particular, the knowledge about the origin of the body, they also help to adapt the treatment of restoration.

Mummies and the C2RMF

French museums curators have to preserve, study and conserve human remains and mummies³.

Numerous projects of conservation-restoration are increasing in museums today, sign of a real concern.

The Centre de recherche et de restauration des musées de France (C2RMF) (Paris) is solicited to give its help and expertise as a service with national competence of the French Ministry of Culture.

Human remains/mummies collections take various forms but the problematic of conservation is quite similar.

- > Organic material compounds are very sensitive and sensible;
- > Similar alterations (cracks, lacunae, weaken of textile, oxydation, etc.) are observed on the collections;
- > Restoration is necessary to preserve the collections but as it is not a minor intervention, precautions have to be taken;
- > Priority is given to non invasive and non contaminating methods, minimal intervention, respect of the human body according to the *ICOM Code of Ethics for museums*.



Various mummies studied and restored at the C2RMF: 1) © C2RMF / D. Vigears; 2, 3, 4, 6 & 7) © C2RMF / A. Chauvet

Research contributions for restoration-conservation

• Understanding of the alterations

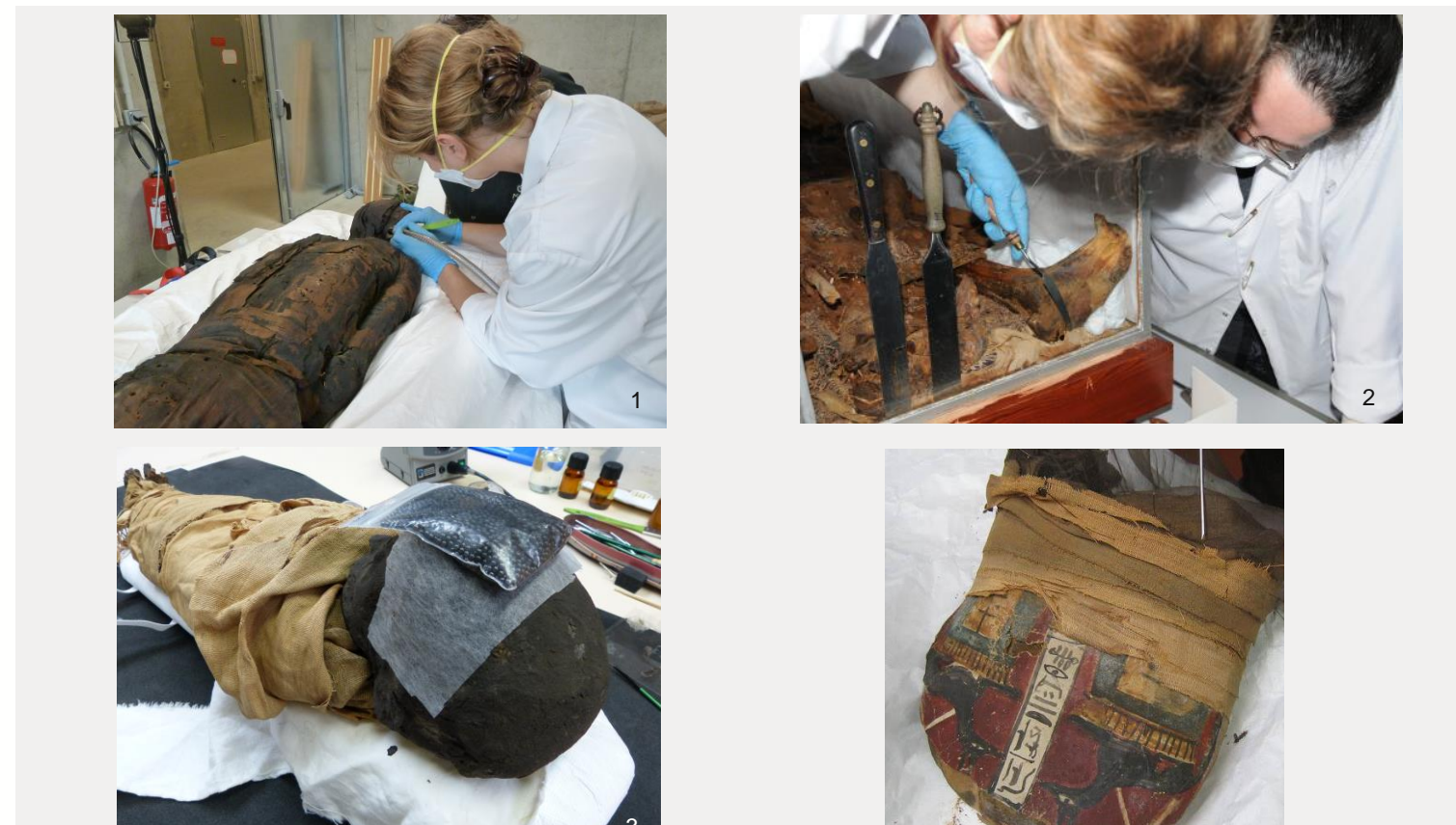
Some mummies suffer specific alterations due to their material history. Sometimes they have also been restored in ancient times with products that can have caused more damages.

- > It is essential to know the material used to establish the diagnostic;
- > It helps to clarify the original from modern additions.

• Adaptation of the protocol of intervention

Exams and analyses provide information to help the conservators define their protocole of treatment.

- > X-rays give indications about the structure. They are necessary to understand the state of conservation of the body, and so on, how to manipulate and where to consolidate if necessary;
- > Organic and mineral analyses, with or without micro sampling, indicate if products are original. They help to determine what can be removed, what have to be kept in regards to conservation deontology and how far to go;
- > VOCs analyses guide the conservator on how to protect himself and others during the treatment operation and whether specific attention should be taken to improve further conservation conditions of the mummy (pollutant sorbent use, airtight showcase, closing/opening protocol, etc.).

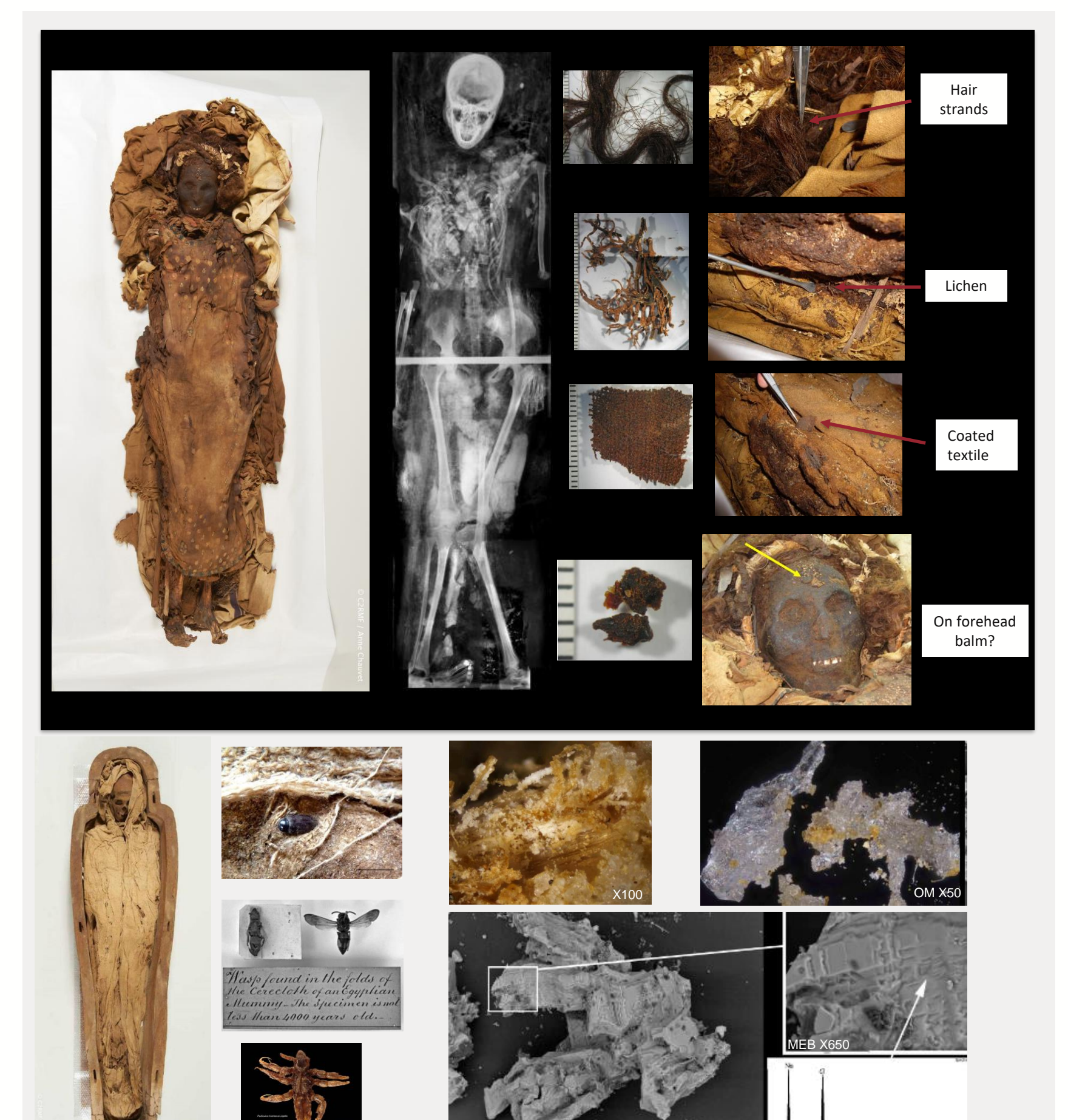


Treatment of mummies of French museums: 1) Dust removal © C2RMF/N. Timbart 2) Removal of the mummy from the showcase © C2RMF/G. de Puiet 3) Refixing in progress of the surface layer of the resin on the head © Laure Cadot 4) Consolidation of textiles (installation of a crepe-line veil) © Laure Cadot

Restoration contributions for research

Restoration time is the perfect moment to investigate the collections since mummies can be observed very closely. Samples can also be taken easily. The knowledge of various fields can be enhanced thanks to these investigations.

- > Embalming process with identification of materials used and enhancement of databases (black materials, resins, waxes, sediments used, etc.) (GCMS, GCFID, MEB-EDX, IRTF);
- > Datation by means of hairs (protocol developed at the C2RMF) or textiles;
- > Archeoentomology which can date the period of the mummification process according to the insects found;
- > Study of a population, establishing links with archaeological excavations and other collections.



Study of the mummy of a woman kept at Joseph Denais Museum (inv. BF3644) (Beaufort-en-Vallée): x-rays, datation, study of organic materials © C2RMF/ A. Chauvet/ J. Marsac/ P. Richardin
Mummy of the 22nd dynasty (inv. 4.2.2) (Anne-de-Beaugue Museum, Moulins-sur-Allier): study of the insects found in the strips and of white to translucent grains found in the thorax of the mummy by CM and MEB-EDS © C2RMF/ A. Chauvet/ N. Timbart / D. Robbis © J.B. Huchet © C2RMF/ Y. Vandenberghe

A case study

Setjaimengaou mummy (Inv. n°M.P.1845.470)

In order to prepare the removal of an Egyptian mummy kept at the museum of Picardie (Amiens, France) from her modern box, some analysis were necessary:

- > X-rays to evaluate if anatomical connexions still exist and how the box is built in order to open it and extract the mummy;
- > Identification of white powder found near the head in the box to evaluate the potential health risks (possibly a modern chemical agent from an insecticide).

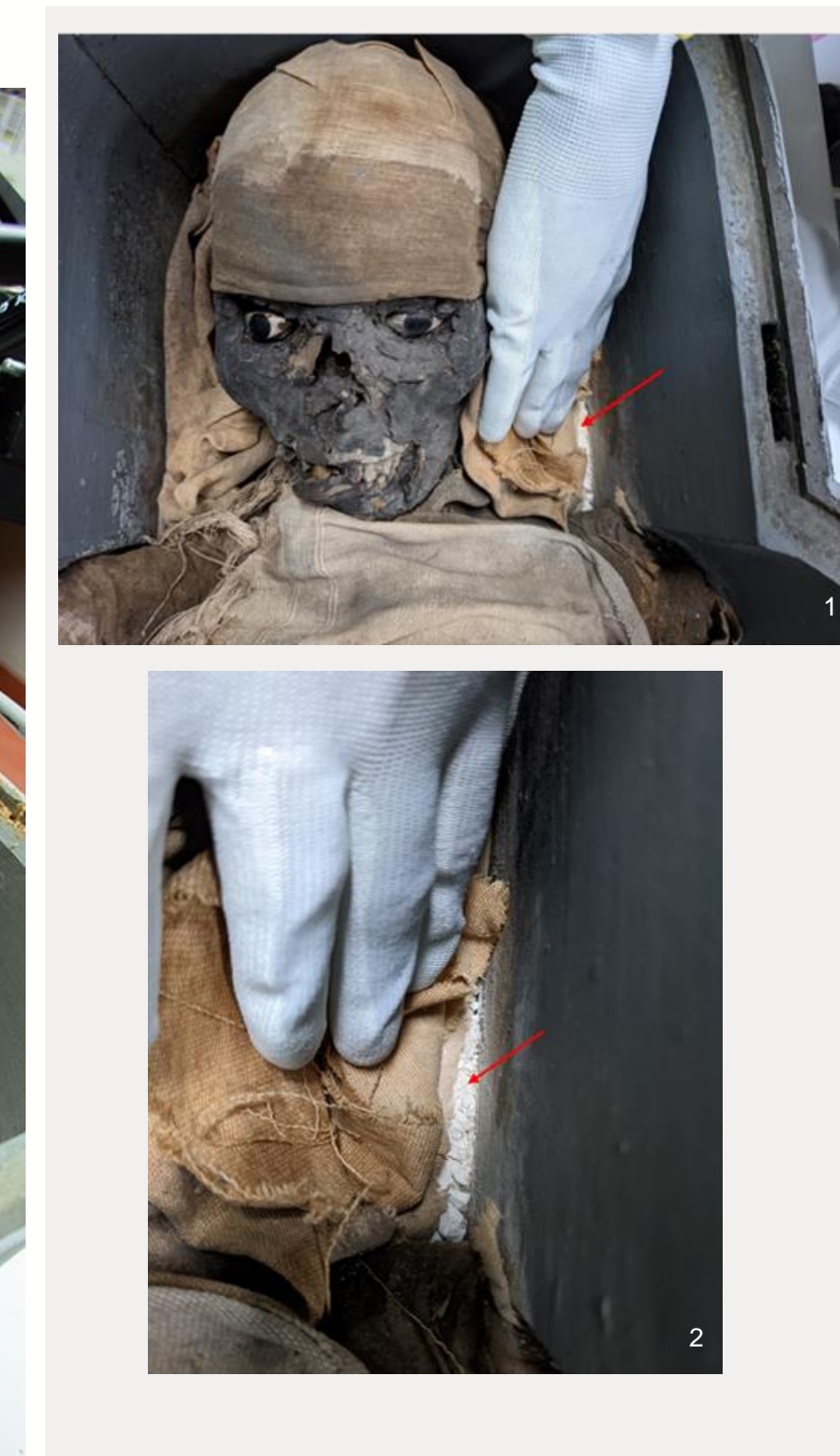
It also gave the opportunity to start the investigation on the nature of the artificial eyes to know if they are original and to evaluate when the strips were removed. During the restoration operation, reflexions about the characteristics needed for the showcase are conducted to prepare the return of the mummy in the exhibition at the museum in good conditions of conservation.



X-rays of Setjaimengaou mummy and her modern showcase © C2RMF/V. Fournier



XRF analysis on the artificial eyes of Setjaimengaou © C2RMF/V. Fournier



1 & 2) White powder next to the head of the mummy © C2RMF/ N. Timbart
3) Removal of the mummy from her showcase by L. Cadot et P. Dal Prà © C2RMF/V. Fournier



Conclusion

More than any other type of heritage collection, the conservation and restoration of mummies requires a collaborative effort between research and restoration. As much as a guide to adapt the restoration process, it has to contribute to increasing our knowledge on the past populations by applying a strict deontological framework without closing the doors to future researches.



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