

FORENSIC SCULPTING IN HUNGARY – CASE STUDIES

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Abstract: *This paper documents four recent cases in Hungary in which personal identification was achieved by three-dimensional facial reconstruction. These cases demonstrate the accuracy and applicability of facial sculpting in forensic identification. However in Hungary, comparison methods play an important and nearly exclusive role in personal identification. The authors have started to build a “micro forensic reconstruction center”. The methods used in this center would generate results, which could be used as evidence in cases where the identity of the deceased is in question. This evidence could be used as a last resort, when other methods of identification are not possible. The authors emphasize the importance of getting sound scientific input and carefully following methodologies to more accurately recreate the subjects’ faces as they appeared in life.*

Keywords: *Personal identification; Forensic anthropology; Facial reconstruction.*

Introduction

Forensic anthropology is the application of the science of physical anthropology to the legal process. The identification of unidentified human remains is important for both legal and humanitarian reasons. Various comparison methods can be employed for establishing the identity of unknown human remains (Ubelaker 1984, Jablonsky and Shum 1989, Sainio et al. 1990, Aulsebrook et al. 1995), but in some skeletized or badly decomposed cases – those which lack any ante-mortem data or suspected identity – facial reconstruction may be the final and only chance of successful identification. Facial reconstruction is employed after thorough anthropological analysis has identified the remains as human (estimated the sex, age at death, living stature, body size, time since death, and population ancestry of the person), and all of the distinguishing marks, individual morphological alterations of the bony skeleton, and any pathological and traumatical findings have been described. Several distinct techniques are used in facial reproduction: two-dimensional drawing, three-dimensional clay reconstruction, and computer-assisted reproduction (Ubelaker and O’Donnell 1992, George 1993, Taylor 1990, Myjasaka et al. 1995, Quatrehomme et al. 1997). Three-dimensional clay reconstruction, also called forensic sculpture, is a method of forensic art used to help identify skeletal remains where the limitations of science are augmented by the intuition of an artist. In this forensic field, success requires the cooperation of an anthropologist and a sculptor. The two-step process (technical phase and artistic phase) is highly dependent on morphological features of bones of the (preferably whole) skull, and on the thickness of soft tissue of the face (Taylor 1999). Tissue depth tables from cadavers and living specimens are partially available from many of racial and ethnic groups (Aulsebrook et al. 1996, Rhine and Campbell 1980, Suzuki 1948, Lebedinskaya et al. 1993, Hodson et al. 1985, Helmer et al. 1986). The basic scientific and artistic technique

is well known, and most publicized method of three-dimensional reconstruction (Snow et al. 1970, Krogman and Iscan 1986, Helmer et al. 1993, Stoney and Koelmeyer 1999, Skultéty 1991).

Case examples

In our four forensic cases, the same procedure is used to prepare the specimen. After the skull is documented, macerated, and cleaned, a negative silicon mask is created. The silicon mask is used to create a gypsum mold of the skull. The combination (anatomical and tissue depth) method of facial reconstruction is used (Taylor, 1999). The detailed method has been previously reported in Hungarian (Angyal et al. 1999).

Case 1. In the summer of 1999, a macerated, hairless female body was found in the southern part of the Hungarian Danube river. A legal autopsy determined that the cause of death was drowning, a few weeks earlier. The age at death, the stature, body physique, and foot size were established. The clothing and personal articles were removed and stored. Police investigative procedures did not reveal any information about the presumed identity of the corpse. After waiting several weeks, we created a combination method facial reconstruction. The police circulated a photograph of the completely reconstructed face (Figs. 1-7), and the victim's father recognized his missing daughter from the photograph (Fig. 8). We collected any available ante-mortem medical data regarding the suspect. This documentation indicated, that the woman had had radiographs taken of her skull not long before. New comparison radiographs were taken of the skull, and the superimposition of the images proved a positive identification.



Fig. 1: Gypsum mold of the skull.
Tissue depth markers in place.
(frontal view)

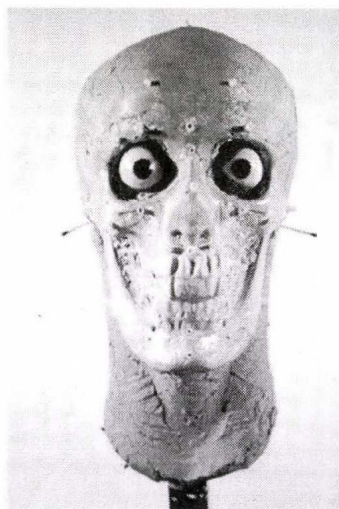


Fig. 2: Soft tissue build-up in
progress I.
(frontal view)

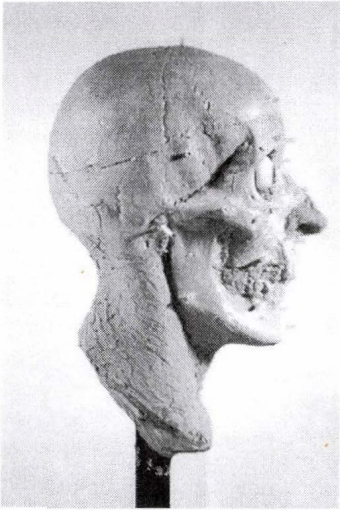


Fig. 3: Facial muscles build-up in progress II. (lateral view)

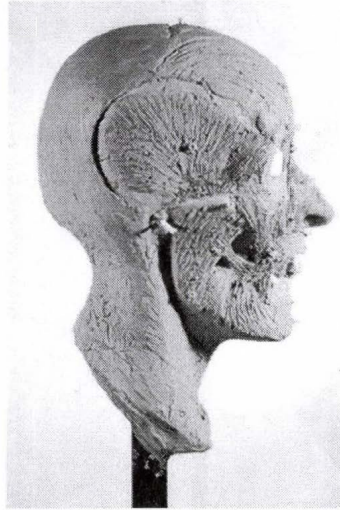


Fig. 4: Facial muscles build-up in progress III. (lateral view)



Fig. 5: Facial muscles build-up in progress IV.

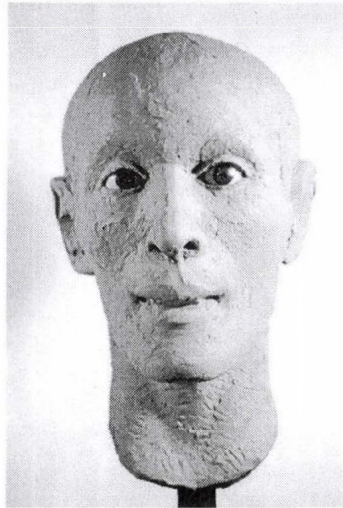


Fig. 6: Completed reconstruction.



Fig. 7: A „conventional” hair style is formed using Cosmopolitan Virtual Makeover software. This photograph was circulated by the police.



Fig. 8: Photograph of the identified individual.

Case 2. At the end of February, 1999, the remains of a skeletized body were found. According to our anthropological investigations, the bones came from a 35-40 year old, 155-158 cm tall Caucasoid woman, who had died 2-3 years before. No pathological or traumatical alterations were found. Police investigative procedures did not reveal any information about the presumed identity of the corpse. A facial reconstruction was made and sent to the police (Fig. 9). To date our efforts have not been successful; the personal identity of the woman is still unknown.



Fig. 9: The reconstructed face with three different style of hair. The identity is still not known.

Case 3. In July 1999, a skeletized, partly-mumified corpse was found near the city of Pécs in the southern part of Hungary. In the center of its forehead was a round entrance wound. The pointed end of a homemade spike gun was embedded 8 cm into the cranium. At the other end of the homemade weapon was a black knit cap, through which the spike had passed (Fig. 10). The bones of both legs were bound together. All of the circumstances suggested an execution-style homicide. Police investigative procedures did not reveal any information about the presumed identity of the corpse. After detailed anthropological and pathological investigation, a facial reconstruction was made and sent to the police (Fig. 11). To date our efforts have not been successful; the personal identity of the young man is still unknown.

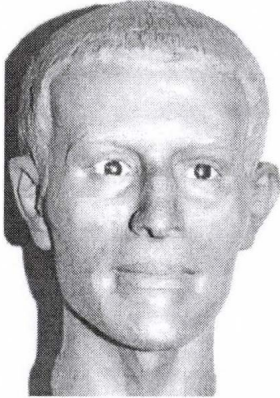


Fig. 10: The completed reconstruction in clay.

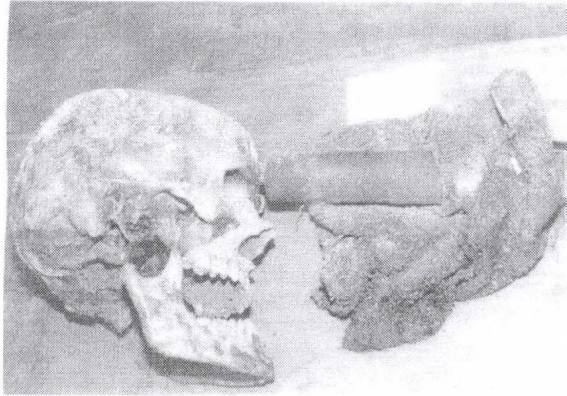


Fig. 11: The position of skull and weapon at the crime scene.

Case 4. In the beginning of 1999, the body of an unidentified man was found in the ruins of an accidentally burned weekend house. The fire rendered the body unidentifiable. The dental, radiological, and medical records of the suspected man were not useful for comparison methods. We created a forensic sculpture of the face.

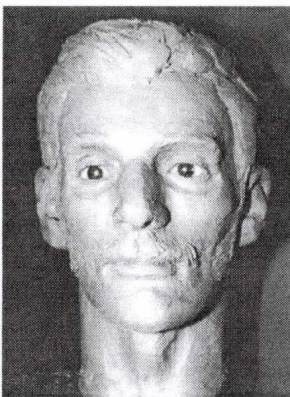


Fig. 12: The updated face in gypsum.

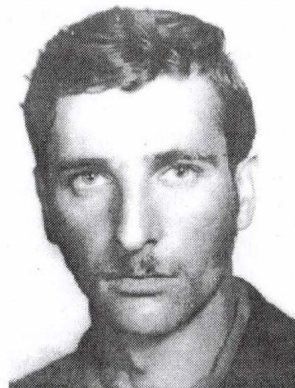


Fig. 13: The photograph of the suspect victim.

Conclusions

One of the main goals in forensic science is the identification of human remains. Many techniques, both manual and automated, exist to reconstruct a recovered human cranium. The forensic use of modern radiological methods, such as ultrasound and computer tomography, has improved the accuracy of soft tissue thickness measurements (Philips and Smuts 1996, Taylor and Angel 1998). Most recently, computerized methods of 3D facial reconstruction have been developed (Tyrell et al. 1997, Vanezis 2000). However in Hungary, there are old traditions of forensic anthropology, and the current facial sculpting techniques are not widely used in forensic practice. Currently there are only three main comparison methods used in our forensics: examination of dental records, superimposition of photographs, and comparison of radiographs (Angyal and Dérczy 1998). The aim of this study is to argue that facial reconstruction may provide additional evidence that results in a positive identification. We emphasize the importance of carefully following international methodologies and of effective cooperation of legal investigative specialists (anthropologists, odontologists, pathologists) and artists to realize the potential success of this field.

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