CHAPTER 1

Forensic archaeology and anthropology in Austria

Fabian Kanz¹ and Jan Cemper-Kiesslich²
¹Department of Forensic Medicine, Medical University of Vienna, Austria
²Interfaculty Department of Legal Medicine, University of Salzburg, Austria

Introduction

In general, archaeological disciplines are closely linked to the local historical, climatic and geographical conditions within the area of research. This is especially true for forensic archaeology, including aspects of the legal system and crime statistics such as the number of missing persons or murder cases. This chapter gives an overview of Austria’s geographical and legal characteristics with regard to forensic archaeological and closely related anthropological works, the educational institutions involved and future perspectives.

Overview of Austria

Austria is a federal Republic with an area of 83,879 km². It is divided into nine administrative states called Bundesländer. The country is landlocked and is geographically situated in Central Europe with borders to the Czech Republic, Germany, Hungary, Italy, Lichtenstein, Slovakia, Slovenia and Switzerland. The country is mountainous, with the Alps occupying about 60% of the territory, and about 43% of Austria is forested. Two-thirds of Austria (68%) is located higher than 500 m above sea level. The climate is characterised by distinct seasons, with an overall temperature between 8 and 10°C in the most populated areas. Austria has a population of approximately 8.5 million, an average of around 100 people per square kilometer, with more than a quarter of the whole population concentrated around the capital Vienna, which hosts all the federal authorities. Additional agglomerations are found around the cities of Linz and Graz, the Inn valley and the Rhine valley to the west of the country.¹

The legal framework affecting forensic archaeology and anthropology

The intersection of five federal bodies forms the framework of forensic archaeology and anthropology: the police, attached to the Federal Ministry of the Interior (Bundesministerium für Inneres), the prosecution and sworn-in experts from the Federal Ministry of Justice (Bundesministerium für Justiz), the Federal Monuments Office (Bundesdenkmalamt) of the Federal Ministry of Education, the Arts and Culture Ministry (Bundesministerium für Unterricht, Kunst und Kultur) and the Federal Ministry of Science and Research (Bundesministerium für Wissenschaft und Forschung). The regulations of federal laws and state laws in the nine federal states of Austria affect work in this new field.

Federal laws include the criminal code, which regulates criminal procedures and autopsy regulations for the coroner’s inquest. Additional federal laws affecting the work of forensic archaeologists and anthropologists in Austria are the Austrian state or independence treaty (Staatsvertrag betreffend die Wiederherstellung eines unabhängigen und demokratischen Österreich; Vienna, May 15 1955), which regulates the procedures on war graves, and also the Monument Protection Act (Denkmalschutzgesetz), which defines archaeological sites. These federal laws are supplemented by the civil code, which respects the landowner’s rights.²³

Because of the federal system with the division into states there are additionally nine state laws dealing with different corpse and burial regulations.

In Austrian law there is a particular system of sworn-in experts, the so-called Allgemein beeideter und gerichtlich zertifizierter Sachverständiger,⁴ who can be called in by the

¹For more information, see: http://www.statistik.at/ (last accessed October 2013).
²For more information, see: http://www.justiz.gv.at (last accessed October 2013).
³For more information, see: http://www.ris.bka.gv.at (last accessed October 2013).
⁴For more information, see: http://www.sachverstaendige.at/ (last accessed October 2013).
prosecutor if police forces do not have the expertise to complete the investigation by themselves. These sworn-in experts have to fulfil several requirements, including 10 years of experience in the field, trustworthiness, equipment and expertise verified by a court examination executed by two experts and a judge. If they fulfil these requirements, they will be sworn in by the court and their names will be published in a public list of experts by the Ministry of Justice. At the moment there are four sworn-in archaeological experts on this list, but none for forensic archaeology and just one sworn-in expert for forensic anthropology (the first author).

Forensic archaeology and anthropology in Austria

Forensic archaeology
To our knowledge there is only one group in Austria dealing with forensic archaeology, the Study Group Forensic Archaeology (Arbeitskreis Forensische Archäologie). This group is associated with the Institute of Prehistory and Historic Archaeology (Institut für Urgeschichte und Historische Archäologie) at the University of Vienna. This institute also has a unit working on modern archaeology. The study group was founded in 2005 by Mr Peter Pesseg and Mr Thomas Pototschnig, and focuses predominantly on the search and recovery of World War II (WWII) mass graves, namely in Rechnitz in the state of Burgenland.

Forensic anthropology
In Austria forensic anthropology as a discipline was introduced for the first time in 2010 in the Department of Forensic Medicine (Department für Gerichtsmedizin) at the Medical University of Vienna; however, a unit for physical anthropology was established in the department as early as 1958.

Forensic archaeology and anthropology within the police
Austrian police can be subdivided into Municipal Police Forces (Gemeindesicherheitswache) and the Federal Police Force (Bundespolizei), which is subdivided into nine administrative state commands. There are no official forensic archaeologists or anthropologists employed in these police forces. In the curricula of the Police Academies as well there are no archaeologists or anthropologists involved in teaching or training. The same is true for the curricula of Austrian forensic pathologists (Facharzt für Gerichtsmedizin). Austrian Federal Police students get an introduction and a guideline as to how to work forensically at a crime scene. They are taught photography, photogrammetry and how to measure and draw crime scenes to create an evidence report. There is a standardised evidence report form used by Austrian police forces so that every policeman would be able to document non-complex crime scenes. For more complex crime scenes the Austrian Federal Police force has its own specialised Scene of Crime units (Tatortgruppen). These small groups, which generally perform the searches for clandestine burials and subsequent exhumations, consist, very often, of highly motivated policemen who are interested in extending their knowledge of archaeology and anthropology. They try to do so with self-study or external educational programmes. There are varying levels of knowledge of archaeological skills within these groups, since they are not taught at the police schools. Therefore groups in Vienna seek to compensate the lack of professional archaeological teaching programmes with a few former archaeologists who are currently finishing their regular police-training programme.

Institutions connected to (forensic) archaeological and anthropology research
Five Austrian institutions are involved with (forensic) archaeological and anthropological research:
• The Federal Monuments Office (Bundesdenkmalamt (BDA)), which has dependencies in most Austrian states and monitors the National Monument Protection Act. The BDA decides about excavation permits for archaeological sites and runs an archaeological site cadastre including the former graveyards and cemeteries in Austria. The BDA recently developed guidelines for excavations where human remains have been found or are expected. These guidelines demand that an anthropologist or an anthropologically trained archaeologist accompany such excavations.
• The Austrian Black Cross (Österreichisches Schwarzes Kreuz (ÖSK)) was founded in 1919 and represents the Austrian War Graves Commission (Kriegsgräberfürsorge), which takes care of the graves and memorials of WWI and WWII soldiers of all nations who died within the borders of Austria.
• The Vienna Institute for Archaeological Science (VIAS) is an interdisciplinary research platform for Archaeological Science at the University of

1For more information, see: http://www.sdgliste.justiz.gv.at (last accessed October 2013).
2For more information, see: http://www.akforensik.at (last accessed October 2013).
3For more information, see: http://www.bda.at/ (last accessed October 2013).
4For more information, see: http://www.bda.at/downloads/1990/Richtlinien (last accessed October 2013).
5For more information, see: http://www.osk.at/ (last accessed October 2013).
6For more information, see: http://www.akforensik.at (last accessed October 2013).
7For more information, see: http://www.akforensik.at (last accessed October 2013).
8For more information, see: http://vias.univie.ac.at/ (last accessed October 2013).
Vienna which consists of several laboratories. The unit for Geophysical Prospection, Geodesy and Photogrammetry is an institution recognised as outstanding in the development of new large-scale prospection possibilities.

- The Centre of Archaeometry and Applied Molecular Archaeology Salzburg (CAMAS)\(^1\) was established in order to offer a joint regulated and directed procedure whenever osseous human remains are discovered during an archaeological or historical excavation, with a special focus on the synoptic evaluation of physical anthropology, ancient DNA data and radiological images in conjunction with the conventional archaeological record.

- The Vienna Environmental Research Accelerator (VERA)\(^2\) is an institution at the University of Vienna which hosts an accelerator mass spectrometry (AMS) facility (particle accelerator) for \(^{14}\)C radiocarbon dating. VERA was strongly involved in the development of the ‘bomb peak’ dating technique for the estimation of post-mortem interval for post-WWII skeletonised human remains (Wild et al. 2000).

The demand for forensic anthropology and archaeology investigations

About 75,000 Austrians die each year, and in 1,300 cases the prosecutors request a legal autopsy to clarify whether third-party negligence can be excluded.\(^3\) In the majority of cases the autopsies take place in one of the four Austrian Institutions for Forensic Medicine, in Innsbruck, Graz, Salzburg or Vienna. The authors can exclude about two-thirds (800–900 per year) of these investigations because they are conducted at their Institutes in Salzburg-Linz and Vienna.

Every year about 100–150 attempted murders are reported to the police, approximately 50 of them involving a murdered person. There are about 10 unidentified bodies each year, in addition to about 15 cases represented by skeletonised remains. Additionally, in 2012, 34 people were reported missing in Austria from the previous 5 to 10 years and another 33 individuals had been missing for more than 10 years.\(^4\) The authors assume that the Central Federal Registration System and health and social insurance IDs are responsible for this comparatively low number of missing and unidentified persons. Usually the police forces are successful in identifying the areas to be searched for a missing person and, in the case of a fatality, ascertaining the identity of unknown remains found. Furthermore, due to the individual social insurance ID, which is recorded at each contact with the Austrian health care system (visit and treatment), it is simple to use medical recordings, such as computed tomography (CT) scans or dental panoramic radiographs, for identification. To our best knowledge we can estimate the demand for classic forensic archaeological investigations (excavations) to be about five to ten cases per year in which human remains have been buried subsurface.

The applied investigation flow for buried and surface skeletonised remains

We can only report on the protocols used at the Departments for Forensic Medicine in Vienna and Salzburg. If the police are called to a reported crime scene with the potential of discovering human remains, they frequently ask the federal BDA for assistance during ground preparation for building construction. The BDA sends an archaeologist who is familiar with the archaeological situation at the site and who may be able to comment on the date of the remains. If the finding place is not registered in the archaeological site cadastre of the BDA, the archaeologist will decide if the remains are archaeological or recent by the inspection of possible accompanying artefacts. If the remains are classified as archaeological, the BDA employee will take over and instigate the procedures of the Monument Protection Act, which will lead, in most cases, to an excavation that has to be financed by the landowner. If the remains are classified as recent, the BDA archaeologist will leave the site and the police will proceed with their investigations. This means that they start procedures with the state prosecutor, who will lead all future stages. The prosecutor has to decide whether the police on site, a specialised crime scene investigation group or external experts should do the crime scene documentation. In most cases where external experts are involved, this will be a forensic pathologist (Facharzt für Gerichtsmedizin) from the nearest forensic medical institution, because of the 24-hour on-call duty complementing the specialised crime scene investigation group. If this forensic pathologist is from the Department of Forensic Medicine in Vienna and the remains found are skeletonised, they call in the Forensic Anthropology Unit (Fachbereich Forensische Anthropologie) for assistance. The Unit will take over the excavation process and all further

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\(^{1}\)For more information, see: http://archaeoplus.sbg.ac.at/camas.html (last accessed October 2013).

\(^{2}\)For more information, see: http://isotopenforschung.univie.ac.at/en/vera/ (last accessed October 2013).

\(^{3}\)For more information, see: http://www.statistik.at/ (last accessed October 2013).

\(^{4}\)For more information, see: http://www.statistik.at/ (last accessed October 2013).
Services offered by the forensic anthropology units in Austria

Within our institutes we have standardised procedures for the finding of skeletonised remains. Normally the prosecutor will order this process or the forensic pathologist will call for assistance from the Forensic Anthropological Unit. In practice, in most cases the police forces will bring the skeletonised remains to the nearest Department of Forensic Medicine for investigation. Basically we offer the following services:

- The recovery of remains on site; if this is rejected by the prosecutor, we provide Standard Operating Procedures (SOPs) for the recovery of surface and subsurface findings. These SOPs define in which order activities at the scene (e.g. photography, evidence marking, documentation of climatic conditions, proper securing of inorganic and organic remains) have to be undertaken, and they are accompanied by a checklist to ensure that our requirements for further analysis are fulfilled.
- Once the remains arrive in the lab the first step is to discover if the remains are of human or non-human origin.
- This is followed by a Minimum Number of Individuals (MNI) analysis to estimate the number of persons represented by the remains.
- For each identified individual a time-since-death or post-mortem interval (PMI) estimation is conducted by traditional methods such as UV detection of remaining collagen (Hunger 1978), or more sophisticated methods such as citrate content in bone (Kanz et al. 2014; Schwarcz et al. 2010) and bomb peak dating by ¹⁴C radiocarbon analysis (Danner 2006; Lynnerup et al. 2005; Ubelaker et al. 2006). Estimation of the PMI is essential for the prosecutor to decide whether the remains are of forensic/medico-legal interest or can be treated as archaeological findings. In Austria homicide does not prescribe it but normally the prosecutor decides for an archaeological case if the PMI is greater than 50 years.
- Assigning a biological profile consisting of sex, age, ancestry, body height and left- or right-handedness where possible.
- Examining ante-mortem conditions, especially trauma and pathological conditions, which are likely to leave traces on the hard tissues and may serve as unique identifying features.
- A unit for craniofacial reconstruction is currently being built up based on the experiences of the Centre for Anatomy and Human Identification at the University of Dundee (Wilkinson and Rynn 2012), and this might support the identification process in the future.
- If there are any macroscopic or microscopic traces on the hard tissues, the cause of death due to blunt or sharp force trauma or gunshot may be reconstructed.
- The identification of post-mortem modifications (taphonomy) to reconstruct the circumstances of the burial or body deposition.
- An expert witness report on the investigation and analysis which can be used in court.

Training and education opportunities in forensic archaeology and anthropology

At the moment there are no studies, either in forensic archaeology or in forensic anthropology, offered by Austrian Universities. There are periodic workshops on forensic archaeology and anthropology organised by ARCHEOskills, an association of student representatives from all German-speaking countries. Most of the lecturers in these 1- or 2-day workshops are associated with the earlier-mentioned Study Group Forensic Archaeology based in Vienna. There is a wide range of BA, MA and PhD studies in archaeology offered by the Universities in Innsbruck, Salzburg, Graz and Vienna. Physical anthropology can only be studied through the BA, MA and PhD programmes at the University of Vienna. A curriculum for an MS in Forensic Sciences, with a significant focus on forensic archaeology and anthropology, is currently under way at the Medical University of Vienna. The start of this course is planned for late 2014.

Conclusion and future developments

Beyond any doubt, there is a need for general improvement of forensic archaeology and anthropology in Austria. Education is required to train future experts in these fields of expertise. Regulations for the service of forensic archaeology and anthropology, as well as an increased awareness of these disciplines by the prosecutors, are also required. This enhanced awareness might be administered by expert talks at postgraduate seminars. Furthermore, regulations and procedures have to be developed to ensure that these specialists are routinely employed during excavations or when special forensic finds are made in the field.

15For more information, see: http://www.archaeoskills-dasv.org/ (last accessed October 2013).
Although most expertise is available in Austria, due to the changes in universities becoming semi-privatised rather than state-run, it is increasingly difficult for prosecutors and the police to rely on civil servant specialists employed at the universities to conduct such special investigations. Therefore the budget to assign external experts has to be increased, or people with the necessary expertise have to be employed by the police force itself. This demands a necessary development for the (re)organisation of federal institutions as mentioned earlier, as well as the development of additional educational programmes. We hope to contribute to this necessary development by offering a Master’s programme in Forensic Science, which will also serve as a platform for exchange and discussion on best practice for invited international scholars. Additionally, national guidelines for forensic archaeological and anthropological work should improve the situation, followed by the accreditation of such experts and institutions realised by the well-established Austrian system of sworn-in experts.

Acknowledgment

We would like to acknowledge the following people for their valuable input, especially on the legal framework in Austria: Professor Edith Tutsch-Bauer (Head of Department of Forensic Medicine, University of Salzburg), Professor Daniele Risser (Head of the Department of Forensic Medicine, Medical University of Vienna), Mr Christoph Blesl and Dr Bernhard Hebert (Federal Monuments Office) and Professor Claudia Theune-Vogt (Head of the Department of Prehistoric and Historic Archaeology, University of Vienna). Last but not the least, we thank the members of the specialised crime scene investigator groups from the State Police Upper Austria, the State Police Lower Austria and the State Police of Vienna. We would also like to thank Mr Nik Green for the improvement of the English manuscript.

References
