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The status and future of forensic archaeology and anthropology in Finland

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Abstract:
In this paper we discuss the history and development of forensic archaeology and anthropology in Finland. Current status of the fields and some future prospects are also highlighted. We offer some potential reasons for why so little research related to forensic archaeology or anthropology is conducted in Finland. To set the forensic archaeology and anthropology in Finland into a broader setting, we discuss the awareness of the fields among Finnish archaeologists, anthropologists, and enthusiasts via the results of an online survey conducted in November 2021. In this manuscript we also delve into some inner workings of Finnish law enforcement and voluntary organisations in order to show how forensic archaeologists and anthropologists could fit into criminal investigations in Finland.

Keywords:
forensic archaeology, forensic anthropology, repatriation, identification, clandestine burial, missing person, education, outreach

INTRODUCTION

This paper gives a short introduction to the history and present state of forensic archaeology and anthropology in Finland and outlines future perspectives. The fields of forensic archaeology and anthropology are not very developed in Finland. Very little research related to forensic archaeology or anthropology is conducted in Finland, as there is a prevailing conception, or misconception, that there is no practical need for it (see [1,2]). The reasoning behind this seems to be threefold. Firstly, it is stated that there are too few homicides in Finland and the Finnish police rarely needs outside assistance in solving them [3-5]. Most of Finland is also covered with snow for roughly half of the year, which limits the options for clandestine burial and discovery of human remains [6]. Secondly, it is often assumed that these fields are not represented in university programs as there are too few experts in Finland and thus there is no one to conduct research [7]. Previous surveys among European anthropologists [1,7] have identified 0-3 active practitioners of forensic anthropology in Finland. While there are no formal programs in Finland for either field, many academics have travelled abroad for the relevant degrees. Work of these individuals has resulted in cross disciplinary research projects related to conflict archaeology and biological anthropology. Thirdly, it is said that there is little public knowledge of or interest in forensic archaeological and anthropological cases, as the fields are not well known among the academia, officials or the public.

In this paper we address these claims and show they are not entirely true. We will use crime statistics to show that there are homicide cases in Finland that could benefit from the expertise of forensic archaeologists and anthropologists. We will highlight a few works done by Finnish forensic archaeologists and anthropologists to show that there are active experts in these fields in Finland. Lastly, we present the results of a recent survey of Finnish archaeologists and archaeology enthusiasts on how well-known forensic archaeology and anthropology are among them.

HOMICIDES IN FINLAND

It is often stated that the Finnish homicide rate is very low while the clearance rate is extremely high [3-5]. The Finnish police therefore has little use for additional outside experts in homicide cases, and in that sense, they would not benefit from the assistance of forensic archaeologists and anthropologists to solve homicides. However, the Nordic homicide report from 2019 by Lehti et al. [3] showed that, while Finland does have an extremely high homicide clearance rate of 98%, its annual homicide rate is over twice as high as other Nordic countries (Denmark, Iceland, Norway & Sweden). In Finland the annual homicide rate per 100 000 inhabitants from 2007 to 2016 was 1.91 while for the rest of the Nordic countries the average homicide rate was 0.79 [3,5]. At the same time, the need for forensic archaeological and anthropological expertise in criminal investigations has been recognised in Denmark and Sweden [1,7-9].

In homicide cases in which the victim is moved from the scene where they were killed, the offender most often tries to hide and/or destroy the body in order to separate themselves from the evidence that might lead to their identification [10,11]. In such cases forensic archaeologists and anthropologists can provide additional evidence of the crime and perpetrator [12-16]. A study by Santtila et al. [11] looked at 502 Finnish homicides from 1980–1994 and found 45 cases in which the victim was removed from the killing site. Häkkänen et al.'s [17] study of the computerised Criminal Index File of the Finnish police, identified 46 homicides from 1994-2005 where the victim was disposed of in a rural location. Preliminary search of the Finnish Homicide Monitor database in 2021 identified 199 homicide cases from 2003-2018 where the body of the victim had been left outside, buried, or otherwise hidden in terrain or water (pers.comm. Lehti 2021). Therefore, homicide cases where the police could benefit from the expertise of forensic archaeologists or anthropologists do occur in Finland.

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ARCHAEOLOGY AND BIOLOGICAL ANTHROPOLOGY IN FINNISH UNIVERSITIES

The fields of archaeology and biological anthropology are generally considered young academic fields in Finland. The first Finnish degree program in general archaeology started in the1920s at the University of Helsinki [18], while the first biological anthropology courses within archaeology started at the University of Oulu in 1996 followed shortly by increasing numbers of master's and PhD theses in biological anthropology [19]. Biological anthropology is still not a full program in Finland, but it is taught as a focus area inside archaeology.

The departments of archaeology and anthropology in all Finnish universities are very small with small student populations and teaching staff. Yearly spaces for degree programs are limited and the acceptance rate of these programs has historically been low (6-9 %) [20-22]. Programs and courses taught are strongly guided and limited by the education and interests of the few permanent department staff. Due to this many subfields such as forensic archaeology and forensic anthropology are mainly taught via occasional elective courses. While medical schools do not have forensic anthropology related courses, forensic pathologists are occasionally offered short workshops on the topic by forensic anthropologists [7]. In 2022, the archaeology unit at the University of Oulu starts a new minor program in osteology which will increase the knowledge on human and animal bones among archaeologists. This is the first regular program teaching osteology in Finland.

Prior to these programs and courses, scholars interested in subfields of archaeology or anthropology had to obtain their education from abroad. Travel is still highly recommended by the universities and often required for doctoral and postdoctoral funding [23]. Therefore, the relatively small Finnish archaeological and anthropological fields are highly influenced and guided by international trends and ideas brought by travelling academics. In the past, Finnish research has focused inwards, ranging from the study of earliest Finns to historic Finland, although over the past 20-30 years the field has opened up more to international studies and projects [24]. Currently there are 1-5 active researchers conducting research related to forensic anthropology and archaeology in Finland, mainly employed by the archaeological and medical departments of universities of Oulu and Helsinki [1,7].

Early biological anthropology research

The studies of the origins of Finns started the field of biological anthropology in Finland in the 19th century. Biological anthropology was considered a part of anatomy [25,26], and the researchers were medical doctors rather than anthropologists (see [19]). The anatomists started the field of biological anthropology, especially with craniometric and anthropometric studies of the Finns (see [27-29]). Extensive anthropometric studies of inhabitants from different parts of Finland continued to be published until the 1950s (e.g. [30-34]).

Another wave of anthropological research consisted of more forensically significant topics, such as stature and sex estimation, and studies of bone density and physique of Finnish athletes (see [35-40]). For example, Telkkä [35] published stature estimation formulae for Finns which are still commonly cited in the history of stature estimation worldwide. Telkkä's research group worked on the skeletal collection housed at the Department of Anatomy at the University of Helsinki, which is still the only documented skeletal collection in Finland. The collection does not include complete skeletons but mainly bones from upper and lower limbs of individuals whose age, sex, and stature are known. The collection was accumulated from anatomical dissections between 1914 and 1937 (for more info see [41]).

In the 1970s anthropological and osteological research was transferred from medical institutions to archaeology units [19]. The biggest push to establish the field of biological anthropology in Finland occurred in the 1990s when Milton Núñez became a professor of archaeology at the University of Oulu [19,42]. Núñez was interested in osteology, and with his extensive international connections, he brought researchers with anthropological interests to Oulu and soon human osteology and other biological anthropology courses were taught regularly (see [19,42]). Bioarchaeology became one of the focus areas of the archaeology program at the University of Oulu. This new focus area has led to several research projects and to a wide variety of publications on human remains and osteological methods (e.g. [43-48]). In addition, Finland has a long research tradition in dental anthropology (see [25]), which has led to a strong field of forensic odontology. The research interests have varied from dental morphology to dental eruption and age estimation (e.g. [49-51]).

Current trends in forensic anthropology research

Due to the lack of recent skeletal collection in Finland, current osteological research concentrates on hospital populations and hospital images (X-rays, MRIs, CT-scans). This enables fruitful collaboration between medical doctors and anthropologists and indicates a growing interest in method development in forensic medicine, anthropology and anatomy. Many of the recent publications are based on medical images of the Northern Finland Cohort 1966 sample which has been used to estimate sex, stature and body mass from the measurements of fourth lumbar vertebrae and knee [52-56]. Forensic anthropologists in Finland do not assess the age of living individuals, but this is done by forensic odontologists in Finland, who are also conducting research on age estimation [57,58].

Huhtiniemi, the first forensic archaeology case

The first Finnish case in which forensic archaeology and anthropology were used was the excavations of a mass grave site at Lappeenranta Huhtiniemi in 2006. The Finnish forensic scientists had already earlier in the 1990s expressed their interest in co-operating with Finnish archaeologists, but this had not led anywhere. Thus, the Huhtiniemi excavations became the first excavations in Finland with a forensic focus. The aim of the fieldwork was to investigate the persistent local rumours about illegal executions of Finnish soldiers in 1944, during the final phases of the Second World War (e.g. [59]). While none of the historical evidence, war diaries, or reports supported these claims, rumours were fuelled by the local townsfolk and conspiracy theorists [60]. The rumours and the slightly macabre interest of the public finally pushed the government to act, and an academic excavation was finally

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carried out by the Department of Archaeology, University of Helsinki, in co-operation with the Forensic Medicine Unit of the Finnish Institute for Health and Welfare, and the Finnish police.

The archaeological and anthropological studies concluded that the site was a mass grave for Russian soldiers related to a mid-1800s military hospital, with no evidence of the alleged 20th century executions [61]. This managed to quiet some of the local gossip, but the planned final popular-scientific publication from the Huhtiniemi project was never published, which has kept the rumours alive to some extent [62-64]. However, most importantly from a professional perspective, the Huhtiniemi fieldwork introduced different actors to each other and their methodologies, and allowed experimenting with various state-of-the-art prospecting and digital documentation methods, such as photogrammetry and terrestrial laser scanning [59,65,66].

Conflict archaeology and repatriation

There is a fine line between forensic archaeology and conflict archaeology and often they are indistinguishable from each other. However, repatriation is frequently recognised as a forensic activity due to the aim of identifying the deceased and due to the involvement of forensic pathologists and other experts. The search and repatriation of soldiers lost in action in the 20th century conflicts and the study of their gravesites, have often gotten most attention in the media [67-70]. The goal of returning the bodies of lost soldiers for reburial in their local graveyards is a politically admired effort and has been described as a pillar of civilised government [71]. The recent celebration of Finland's 100 years of independence and the stories of the Second World War veterans have furthermore prompted the public interest in Finnish wartime sites and monuments, and also in the repatriation effort. In Finland the repatriation effort has been organised by the Association for Cherishing the Memory of the Dead of the War since 1988, with about 250 volunteer fieldworkers [72]. Practitioners of forensic medicine and forensic archaeologists have been taking part through the years in this work alongside the volunteers. The recent ongoing forensic projects run by archaeologists concentrate also on the mass graves [66,73,74] and on improving the used prospecting and documentation methods. For example, geophysical and airborne remote sensing approaches are being actively applied and developed in the search for the graves of Soviet soldiers and prisoners-of-war at the renowned Raate Road battlefield and in Lapland (figure 1, [75]).

COLLABORATION BETWEEN THE ACADEMICS AND OFFICIALS

While there is no formal forensic archaeology or anthropology education in Finland, some trained archaeologists have continued into forensic studies, and some have also been employed by the Finnish police. Some Finnish biological anthropologists and odontologists have also taken part in forensic investigations abroad via Disaster Victim Identification and Finnish Forensic Expert teams. In the following we will briefly highlight the work of these teams and present some Finnish associations promoting collaboration between academics and officials.

Figure 1. Slingram mapping of a Second World War mass grave at Raate Road battlefield in early October. (Photograph: Oula Seitsonen 2021)

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Case work at Finnish National Bureau of Investigation (FNBI)

The Finnish National Bureau of Investigation (FNBI) currently (in 2021) employs one forensic anthropologist with an archaeological background, who works on basic skeletal and trauma analyses, takes part in the identification process, studies decomposition and occasionally attends the field searches and exhumations [1,76]. The anthropological case load in FNBI is approximately 70 cases per year. This number includes animal bones and the WWII cases leaving approximately 20 modern forensically significant cases per year ([76], pers. comm. Söderholm 2021). Most of the forensic cases requiring anthropological analysis go to FNBI through official requests from local police or forensic pathologists. However, biological anthropologists at the universities also occasionally assist the local police with local cases, especially in differentiating between human and non-human bones [76,77]. However, there are no statistics available on how often anthropologists or archaeologists are involved with field searches.

Disaster Victim Identification (DVI) and Finnish Forensic Expert teams (FFET)

Concurrently with the development of bioarchaeology and osteology, forensic anthropology has been advancing within forensic medicine through Disaster Victim Identification (DVI) teams and Finnish forensic expert teams (FFET) [78]. In the 1990s, the FFET led by forensic odontologist Helena Ranta included a biological anthropologist during the forensic investigations in Bosnia and Herzegovina and Kosovo [79,80]. In addition to conflicts abroad, the repatriation and identification process of the fallen Finnish Second World War soldiers started to advance in the 1990s. This ongoing work has included and still includes a forensic anthropologist who works on the identification with forensic pathologists, odontologists and geneticists [71].

Voluntary organisations and missing persons

In countries where forensic archaeologists and anthropologists are actively involved in criminal investigations, they also assist in missing person cases (see e.g., [1,9]). In Finland the bulk of this work is conducted by police officers and voluntary organisations. The major voluntary key player in Finland is the Finnish Voluntary Rescue Service (Vapepa), a network of 54 organisations coordinated by the Finnish Red Cross. It has a pre-existing assistance agreement and relationship with the police and other rescue services across the country. [81-83]. In 2020 Vapepa took part in 266 searches for missing persons [84].

In cases where police enlist the Vapepa to locate a missing person, the search is planned in cooperation with the police and Vapepa leaders [82,83]. Depending on the location and situation Vapepa alerts different organisations within its network, such as the Finnish Search and Rescue Dog Association and the Finnish Air Rescue Society. An emergency search is continued until the missing person is contacted or the police no longer has a reason to believe the person to be in the area or to be alive. If the person is still deemed missing after the emergency search is called off, the police progress into investigative search. Investigative search continues until the person is contacted [81,85]. The police may also enlist the help of Vapepa and other services in delayed searches, which may occur years after the initial disappearance and they often involve more planning and opportunities for collaboration between experts [81,83,85]. These delayed searches would offer the perfect opportunity for forensic archaeologists and anthropologists to offer their assistance and expertise in locating the missing persons or possible clandestine burials. However, Vapepa currently has no agreement with any formal associations of forensic archaeologists or anthropologists.

Finnish Association of Forensic Archaeology and Anthropology (FAFAA)

The Huhtiniemi excavations of 2006 presented the first concrete opportunity for Finnish multidisciplinary cooperation and engagement between academics and law enforcement [59,64]. In the aftermath of the excavation was founded the Finnish Association of Forensic Archaeology and Anthropology (FAFAA) that has hosted lectures and training sessions in digital documentation and geophysical prospection methods for both archaeologists and members of FNBI to encourage the interaction between academics and law enforcement [86]. However, there are currently no official procedures for potential involvement of archaeologists in the study of contemporary forensic cases in co-operation with the police, and there is generally a lack of information of the benefits of archaeological methods on the side of the police investigators. Thus, the focus of archaeological work by the members of FAFAA and other researchers has been primarily on the 20th century conflict heritage, such as the traumatic Finnish Civil War 1918 gravesites and the Second World War mass graves (e.g. [66,73]). This is also partly due to personal interests of the few leading researchers and to the acquired research funding [73,87].

RESULTS OF A SURVEY: RECOGNIZABILITY OF FORENSIC ARCHAEOLOGY AND ANTHROPOLOGY IN FINLAND

To assess how well the fields of forensic archaeology and anthropology are known among Finnish archaeologists, anthropologists, and enthusiasts, we carried out an online survey in November 2021. The responders were asked whether they knew what forensic archaeology or forensic anthropology were; how they would define them; if they differed from each other; and whether they were used or needed in Finland. Within three weeks, we received 103 responses, a relatively small sample, but we believe it reflects the target group considerably well. Responders were reasonably evenly spread among genders, age groups, and employment status, and most of the responders (80%) had an undergraduate degree or higher.

64% of the responders knew that forensic archaeology and forensic anthropology were applied in Finland, by archaeologists and anthropologists who were involved in the mass grave excavations, repatriation efforts, police investigations, and in various academic research projects, for example (table 1). The majority (75%) also believed that there is a need for forensic archaeologists and anthropologists in Finland. Most of the responders deemed that there is a need for continuous research and development of new forensic methods, while at the same time few (11%) were sceptical whether these would have any actual use in Finland. Thus, both fields appear to be perhaps surprisingly well-known among the Finnish archaeologists and enthusiasts, considering how little research there has been so far and how limited the amount of public outreach related to them has often been.

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The results of the survey are positively skewed due to the biased target group and would likely be different if the questionnaire were to be sent out to the greater public. However, even within our positively biased target group the definitions and differences between the two fields are muddled. While in our questionnaire more responders declared knowing what forensic archaeology is compared to forensic anthropology, less of them were able to define what forensic archaeology is than what forensic anthropology is. It is not surprising that forensic anthropology was more familiar to the responders than forensic archaeology, as there is a strong bioanthropological focus in archaeology programs in Finnish universities, as discussed earlier. TV-shows and movies have also brought the field of forensic anthropology closer to the public on a general level, but as these shows generally lack scientific accuracy, the details of the field remain obscure to the public.

Table 1. Summary of results to selected yes-no questions from a survey conducted among Finnish archaeologists, anthropologists, and enthusiasts in November 2021. N=103

Question	%Yes	%No	%I don't know
Are you interested in forensic archaeology of anthropology	76.7%	4.9%	18.4%
Do you know what forensic archaeology is	71.8%	28.2%	n/a
Do you know what forensic anthropology is	62.1%	37.9%	n/a
Do forensic archaeology and anthropology differ	65.1%	1.9%	33 %
Is forensic archaeology or anthropology used in Finland	64.1%	1 %	34.9%
Do you believe forensic archaeology or anthropology are needed in Finland	74.7%	1 %	24.3%

FUTURE DIRECTIONS

The misconceptions and claims presented in the introduction of this paper have now been shown to be false to some extent. The crime statistics discussed earlier show that there are criminal cases in Finland that would benefit from the expertise of trained forensic archaeologists and anthropologists. For example, Finland has roughly 3-5 homicide cases per year (based on cases from 1980 to 2005, [11,17]) that could benefit from archaeological consultation. However, as actual clandestine burials are relatively rare, it is hard to establish a habit or procedure where an outside expert would consistently be summoned to the scene. To counter this, a research project focusing on past homicide cases is underway. The study aims to show how forensic archaeology and anthropology could have provided additional evidence to support the investigation, prosecution, and save resources [75]. Furthermore, current search and exhumation strategies and approaches are evaluated and potentially new ones, optimized for the Nordic conditions, are being developed by one of the authors.

Forensic archaeologists could also be included in the search of missing people like other volunteer experts through Vapepa. Forensic archaeologists can, for instance, help to plan systematic field searches to locate missing people. Delayed searches conducted after the missing person is deemed deceased offer an opportunity for inclusion of archaeological methods, such as prospection and survey methods. Co-operation and information sharing between forensic experts, forensic pathologists, police officers, and forensic archaeologists and anthropologists might open new perspectives on how the fields and their expertise could be utilized in forensic contexts in the future. Finnish anthropologists and archaeologists would also benefit from more knowledge on Finnish crime scene investigation procedures and the chain of custody. For such collaboration to happen, all parties would need to be aware of each other. Conducting a survey among forensic experts, forensic pathologists and police officers could provide insight on how the other Finnish forensic experts see forensic archaeology and anthropology and their use in case work.

Our questionnaire showed that among those with some knowledge of forensic archaeology and anthropology, the fields are viewed as important and needed. Indeed, when research proposals for forensic archaeology and anthropology topics have been made in the past, their societal significance has been recognised and these projects have received the required funding (e.g. Huhtiniemi excavations). Promoting forensic archaeology and anthropology to the wider public could therefore increase the available funding, which in turn would benefit and promote research and teaching in the future. Currently, there are no continuous efforts to provide the public more information about the fields. Sporadic lectures and school visits are offered by individual researchers. Active public outreach via lecture series organized by FAFAA is the next step to increase the depth of the public knowledge about forensic archaeology and anthropology. Similarly, there has been discussion of joint training sessions between the FAFAA and law enforcement.

CONCLUSION

Regardless of the lack of formal programs in forensic archaeology and anthropology, both fields are actively moving forward in Finland. Repatriation efforts and collaboration between biological anthropologists and medical professionals has resulted in cross disciplinary research projects and methods. Forensic anthropologists are also working with the FNBI and consulting local police when needed.

Even though the fields are present in Finland, the activity is still small-scale and could benefit from more stable status within forensic investigations. Finland has the highest homicide rate in the Nordic countries, and yearly there are multiple cases ranging from homicides to missing persons where forensic archaeologists and anthropologists could offer their professional assistance. One reason for the exclusion of forensic archaeologists and anthropologists from these cases is probably the lack of knowledge about the value they could offer. Co-operation and information sharing between the law enforcement and forensic archaeologists and anthropologists, as well as educating the public about forensic archaeology and anthropology are the keys to moving the forensic field forward by unlocking forensic research opportunities and funding.

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