Ethical considerations in the use of DNA as a contribution toward the determination of identification in historic cases: considerations from the Western front

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Margaret Cox and Peter Jones

Introduction

This paper gives an account of the authors’ involvement in the Fromelles Project (2008–2014) and discusses the main ethical issues confronting them in their roles as scientific advisors to the project. The principal aim of this project was, where possible, to determine the identification of 250 British and Australian soldiers killed at the Battle of Fromelles (France) in July 1916, and excavated from six mass graves located on the outskirts of the present village of Fromelles in 2009. The main areas considered here are: (i) informed consent and managing expectations, (ii) openness about the potentials and limitations of the process and its context – both historical and contemporary, (iii) managing incidental findings, (iv) the ramifications of semantics, particularly the unwitting use of de-humanizing terms when seeking to identify individuals involved as components of multiple deaths, and (v) the level of proof to be applied to the identification of those dying in the recent, historic or archaeological past.

Keywords: Fromelles; identification; war dead
be confused with their nationality), and (iii) reinter them in appropriate individual marked graves in a purpose-built new cemetery constructed on land donated by the commune of Fromelles.

It is important to stress at the outset that the motivation for this project was driven by a group of determined and committed Australian and French civilians, led by Lambis Englezos, who were concerned that many Australian soldiers (1294) from the battle had never been recovered and that their collective place of burial was unknown and lost to human memory. The initial evidence that ultimately led to the probable identification of the burial site included data from British aerial photographs taken before and after 19 July 1916. There were also informative references to the graves in records housed in the German War Archives in Munich and in the archives of the International Red Cross located in Geneva (Pollard et al. 2008). Historical sources strongly indicated that the graves were situated south of Pheasant Wood, just outside of Fromelles. Amongst these sources was a letter from the Red Cross dated January 1918, which stated that a Lieutenant Bowden was buried either in a mass grave “before Pheasants Wood” or in a collective grave at nearby Fornes (http://recordsearch.naa.gov.au/scripts/Imagine.asp, 84 et seq). German burial parties buried enemy dead who had fallen on or behind their lines in six of eight mass graves as ordered by Major General Julius Ritter von Braun in July 1916 (Steel 2010).

In the face of much public and media pressure, the Australian Army History Unit commissioned Glasgow University Archaeological Research Division (GUARD) to examine the area. The site was subject to an initial non-invasive survey by GUARD in 2007 (Pollard, Barton, and Banks 2007), followed by a limited site evaluation in 2008 (Pollard et al. 2008). The evaluation results indicated the presence of eight mass graves with between 225 and 400 burials (similar to the figure mentioned in German orders for digging the graves). At this point, because the graves potentially also held missing British soldiers, the British Government became involved. While always attempting to identify to name (where possible) the mortal remains of missing British personnel from historic cases discovered during building, agricultural or other activities, the British Government does not usually actively seek to locate missing soldiers from early twentieth century conflicts with no known place of burial (hereafter referred to as “the Missing”) as the numbers involved are simply too great and for most the likelihood of being identified has, in the past, been very slight.

The Fromelles project has subsequently been developed and undertaken on behalf of the Australian and British governments, through their respective defence departments under the auspices of the Fromelles Management Board (FMB). The Commonwealth War Graves Commission (CWGC) project-managed events on the ground and led the design and construction of a new cemetery for the re-interment of the Buried in individual marked graves not far from the site of their original burial place. The authors provided scientific advice in their
respective fields of expertise (MC – forensic archaeology, anthropology and identification and PJ – molecular genetics and identification).

Planning and delivering this project commenced in 2008, the excavation and anthropological analysis were undertaken by OA in 2009 and DNA profiles were compiled from the Buried from mid-2009 until early 2010. DNA analysis of samples donated by possible informative genetic relatives (hereafter referred to as the Donors) was undertaken from 2009 to 2014. Analysis of all available biological, genealogical, historical and artefactual data sets began in early 2010 and concluded in 2014 when this joint governmental project ended. Thereafter individual governments are taking responsibility for responding to any putative familial DNA donors that follow.

Extensive use was made of the protocols and standard operating protocols for excavating mass graves published by the Inforce Foundation (Cox et al. 2008). DNA analysis was largely undertaken by LGC Forensics with Cellmark Orchid undertaking some additional profiling work. The process of producing viable DNA profiles depended on the quantity and the condition of the DNA after 94 years of burial in largely waterlogged clay (Pääbo 1989), complete with its particular biochemistry. Fortunately, the pH of the site was between 7 and 8, which makes the survival of the DNA more likely, but the human remains were interred in the presence of many potentially contaminating objects. It was therefore decided to undertake a feasibility study during the first six weeks of excavation to determine if, and how well, the DNA survived, and which of the bones and/or teeth provided the most suitable and reliable material for analysis. The result of the feasibility study confirmed that teeth were the most reliable source of viable DNA but that other bone samples were also productive, though not to the same extent. This confirms the findings of others (Boles, Snow, and Stover 1995; Girsch et al. 2010; Higgins and Austin 2013; Hollund et al. 2013). Analysis of the DNA of the Buried was complete by March 2010 and that of an exclusion database (essential to rule out accidental cross-contamination) by the summer of 2010. Each country took responsibility for tracing relevant families of their Missing. In Australia this was undertaken initially by a specific unit set up within the Department of Defence and latterly by the Unrecovered War Casualties Unit of the Australian Army, and in the UK by the Joint Casualty and Compassionate Centre (JCCC) of the MoD. For further details on this battle and the project designed to recover, identify and rebury the dead, see Brady 2010; Cobb 2007; Cox 2010; Cox et al. 2014; Jones 2010; Loe 2010; Loe et al. 2014; Pedersen 2004; Steele 2010; Summers 2010.

The main review of all available data took place annually when the Data Analysis Team (DAT) was convened, until 2014. Aside from the authors, also involved in the DAT were subject matter experts, including representatives from OA, the Australian Department of Defence (for Australian families), and the JCCC for UK families. An administrator and a data manager were part of the project team (one British and one Australian), their roles being to record the proceedings, create
records, keep those records up to date and maintain data security. After each year’s analysis, the DAT chair (MC) and deputy chair (PJ), ultimately made recommendations to the Joint Identification Board (JIB) based on the evidence available for each case. The JIB also served as a Board of Inquiry for the Australian Government and as such was subject to the regulation governing that process.

The importance of establishing identification

The CWGC is the only organization with the authority to undertake the recovery and curation of British and Commonwealth Missing found incidentally around the world, and works with the JCCC, in the first instance, to identify the Missing to a name where possible. For British soldiers the JCCC also try to trace and contact living relatives of those recovered and arrange for reburial with full military honors in the nearest CWGC cemetery to the place the soldier fell (for further details see Summers 2008). The guiding principle of the CWGC in its work is equality of treatment for all war dead irrespective of rank, creed or race. The dead of other nationalities (including Commonwealth countries) are administered through their respective Government agencies for unrecovered war dead. This effort, as others initiated by NGOs and government agencies around the world, reflects many things including the concept enshrined within the Geneva Convention (1949) that those dying in warfare are entitled to an individual named grave where such is possible. In 1996 the importance of establishing the identity of those dying in conflict was also stressed by Interpol in its Disaster Victim Identification Guide (Interpol 2009). Added to the issue of identity, Additional Protocol I of the Geneva Convention (1949) also states that families have the right to know the fate of their missing relatives.

The process of identification has significant relevance and importance to families of those lost (Stover and Shigekane 2002), and also offers comfort to many of today’s soldiers. While after WWI many families had no choice but to be satisfied with being presented with a “paper death,” where their loved one was missing presumed dead, today this is not the case. This was evident after the Srebrenica massacre, when many mothers of the Missing refused to accept that their sons and/or husbands were dead. Without a body, they considered that their menfolk had been “written off” by virtue of them being presented with a death certificate (Stover and Shigekane 2002). The relevance of identifying lost soldiers from as long ago as WWI reflects that some of the Missing still have close surviving relatives, including siblings, and many have living grandchildren, nephews and nieces. It is the genetically informative relatives of individuals such as these who have donated DNA samples for the Fromelles project.

It is also important to consider the power of family “lore” and “memory” where only more distant relatives exist; this should not be underestimated, as their influence is still evident in families where no one still living ever knew the deceased soldier directly, but memories and emotions about them have been passed on by
closer relatives, since deceased. It is also evident, though not surprising, that a number of living informative relatives may have no knowledge of their kinship to a dead soldier. In this project, many individuals who became DNA donors were located by genealogists, who painstakingly pieced together a family tree from publicly available records to identify a living relative. Many of these relatives were extremely distant, going back up to seven generations to a common ancestor. Despite these limitations, 47,933 individuals with a putative Australian soldier ancestor and 11,274 individuals with a putative British soldier ancestor were identified and assembled into 931 Australian and 256 British family trees. This then resulted in 2048 Australian and 460 British contacts, some of whom were requested to provide a DNA sample in the form of a buccal swab.

The Fromelles Project considered that work identifying our war dead is also important for surviving family members in that it denotes care and respect for those who fight and die during warfare in the past and today, and of course the same principle of beneficence applies to those innocent victims who lose their lives during mass disasters and episodes of violence including atrocity crimes (Scheffer 2001). Stover and Shigekane (2002) cogently set out the long-term psychological impact on relatives of the Missing who have no body to bury and no ability to conduct appropriate funerary rites. Further, they raise the importance of recognizing cross- and multi-cultural beliefs amongst and within groups and, particularly relevant to this project, that families of the Missing benefit enormously from being actively involved in the legal and humanitarian efforts to locate, excavate, identify where possible and memorialize their dead (Stover and Shigekane 2002, 862).

The processes undertaken for this project were fully compliant with relevant Australian, UK and EU regulation and legislation, and adhered to all international guidelines relevant to the different aspects of work involved. A number of guidelines have previously been produced by the UN, governments and NGOs including the Inforce Foundation (Cox et al. 2008), the US Department of Justice Office of Justice Programs (2005), Interpol (2008, 2009), the International Committee of the Red Cross (2005), and organizations such as the National DNA Database Ethics Group (2008). All stress that forensic scientists (and those involved in identification programs in other capacities) must recognize their obligation not only to the legal (and other) institutions that retain their services, but equally to the families of the Missing (Stover and Shigekane 2002, 864).

In the following discussion, we outline some of the key ethical issues encountered by practitioners like ourselves in Fromelles and similar projects. Many similar large-scale excavations have taken place elsewhere, for example following the Spanish Civil War as part of the “Recovery of Historical Memory” program (Renshaw 2011; Riosa et al. 2012; Ferrándiz 2013), after the recent conflicts in Serbia (Komar 2003; Djuric et al. 2005), Kosovo (Djuric 2004) Croatia (Slaus et al. 2006) and Macedonia (Jakovski et al. 2010), and in Poland (from the 1945–1956 conflict) (Szleszkowski et al. 2013).
Key issues

Agency and dignity

Certain ethical fundamentals are crucial to any program recovering the dead and attempting to identify them. The overriding principles in this project and ideally in all such projects, whether relating to the recently deceased or those from the past, and their living relatives, are agency and dignity (as set out in the International Declaration of Human Rights in respect of the living) (Rosenblatt 2010). When dealing with the dead, agency implies that the dead and their deaths can influence the living in many ways – some negative and some positive. Dignity as a right is inherent and inviolable and, while not a word often used in respect of the dead, to restore identity to the Missing, to accord them appropriate funerary rights, and to liaise with, and inform, their families, is part of restoring the deceased’s rights while also protecting and promoting the rights of the living. This principle is explicitly or implicitly stated in almost all UK guidelines relating to the excavation and analysis of human remains (Cox et al. 2008; Institute of Field Archaeologists 2008).

Semantics

Certain semantics used frequently in projects examining human remains, whether from the past such as at Fromelles, the more distant archaeological past, or more recently, as in the aftermath of atrocity crimes and major fatality incidents (accidents and natural disasters), can be perceived as offensive and are potentially dangerous. The use of terms such as “remains” and “sets of remains” are unacceptable and contentious for several reasons. They are imprecise in meaning (and confusing for non-experts and families of the Missing) but of far greater importance, these and similar terms potentially demean and dehumanize the dead such that they might in some circumstances be treated as less than human. Their rights and those of their families may consequently be ignored, or at best treated in a different manner than those of other groups. There have been occasions when experts from one country, working in another, have treated the deceased in a manner different from how they would have treated their own nationals. Experience has shown that neo-colonialism in international forensics (as other interventions) is sometimes an unfortunate reality in a world where the majority of those experts lending assistance in the developing or post-conflict world are of European ancestry, well educated and middle class.

Socio-cultural implications

Projects such as Fromelles that involve exhuming, excavating or recovering the dead, historical, archaeological or otherwise, must recognize that management of the dead has important socio-cultural implications, including those dictated by the religious belief of the deceased and related survivors (see Stover and Shigekane...
All work undertaken must be conducted in a manner cognizant of those issues and must ensure that handling and treatment of the dead does not cause further distress to those affected (Morgan et al. 2006), as far as it is possible to do so and still achieve the aims of the project. For Fromelles, the list of names of the Missing and their enlistment records (where they survived – not many do for the British from World War I) suggested that many of the Buried were Roman Catholic or Protestant, but that a minority might be Jewish or of Aboriginal descent. As such, consideration was given to how best to proceed with minimal adverse impact to the deceased and their living relatives, recognizing and as far as was possible following the tenet of their values. Consequently, no over-riding religious or ecumenical approach was adopted explicitly or implicitly in either the recovery or identification process.

Managing the expectations of donor families

It is vital in projects such as this that the participating public’s expectations are managed appropriately and realistically and that false hope is not given. The process, its context – both historical and contemporary, its potential and limitations all have to be made clear. How best to manage the expectations of the families of the Missing was a particular ethical issue, since identification of the dead is perceived as a given, especially when DNA is used. This is a consequence of the manner in which the media and popular culture portray and glamourize science and technology. Given that there are over 1600 Missing from Fromelles, and only 250 Buried, the odds of any donor finding their Missing were at best one in six. This, taken with the fact that not all families of the Missing will have genetically informative DNA donors, and that some family lines may be impossible to trace or have become extinct, means that some of the Buried will inevitably remain unidentified. This will be compounded by the incidence of illegitimacy and unrecorded adoption in the cohort (see later discussion).

Contact with the families of the Missing with no known grave was undertaken differently in Australia and the UK, reflecting the practicalities in the two countries. In both it involved extensive use of local and national media to highlight the project. It should be appreciated that while the Battle of Fromelles is hugely important in Australian history, in the UK most people were completely unfamiliar with it.1 In the UK, regimental organizations were used to raise the profile of the project and contact relevant families in those areas where the regiments concerned were raised during WWI. Each regimental organization hosted an event that interested parties could attend, where they could meet and talk to some of the experts involved and where they were given extensive information about the project and the

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1In 1922 the Battles Nomenclature Committee (as approved by the Army Council, London, War Office) decided that Fromelles was to be described as the “Attack at Fromelles” a subsidiary of the Battle of the Bazentin Ridge (14 - 17 July 1916).
processes involved. The limitations of all of the methodologies to be used were explained, in order not to raise expectations that might not be met. This principle was also adopted in the informed consent process.

**Informed consent**

Since the discovery of the unauthorized removal and retention of organs from children who died between 1988 and 1995 at Bristol Royal Infirmary and Alder Hey Children’s Hospital, and the subsequent public enquiry resulting in the Redfern Report (2001), the entire process of handling human tissue and informed consent in the UK is now covered by the Human Tissue Act (2004). The principle and practice of informed consent has been established to enable participants in all medical research to have full knowledge of projects and studies in which they are participating, and their consequences. For Fromelles, given the personal and familial circumstances of individual Donors, the information obtained as the result of a DNA profile could have implications beyond the scope of the project. As such, it was important that the scope of informed consent was extremely narrow, and for this project it was specifically directed toward the identification of the 250 Buried. The basis of informed consent used was derived from current practice in clinical genetics (Burgess 2001; Hodge 2004) and incorporated the General Medical Council’s (GMC 2008) guidance on consent. The latter was revised in 2011 by a Joint College Report (2011) on consent and confidentiality in clinical genetic practice. The provisions of the Human Tissue Act (2004), Mental Capacity Act (2005) and the Data Protection Act (1998) were also considered when drawing up the informed consent form. Given the international basis of the project, it was decided to use UK law and practice as the basis with the final wording checked by Australian lawyers to ensure that it was not inconsistent with Australian laws and practices. As the tissue samples and subsequent DNA from the Buried were less than 100 years old, they fell under the jurisdiction of the Human Tissue Act (2004). The Act appeared at first to prevent the DNA analysis from taking place in the UK, but detailed reading of the Act and help provided by the Human Tissue Authority established that because the samples were to be imported into the UK for “a scheduled purpose,” the work could proceed (for current guidance see HTA 2009a). The Human Tissue Authority Code of Practice on consent was also followed (HTA 2009b).

Informed consent was sought from all family members who donated a sample for DNA analysis. Participants were informed of the reasons for the DNA analysis, namely contributing to the identification of the 250 buried. They were also

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2For consent to be valid it must conform to three basic tenets:

☐ It must be given voluntarily (with no coercion or deceit).

☐ It must be given by an individual who has capacity.

☐ It must be given by an individual who has been fully informed about the issue.
informed that the data would only be used for this purpose. The informed consent form required the signature of the participant and a witness. Donors were also made aware that the information would be treated as confidential and were informed where it would be stored throughout the project. An important aspect of this process was that a donor could withdraw their consent at any time, and did not have to provide a reason for doing so. This has happened on a small number of occasions; that person’s profile was then removed from the database, and the donor informed.

**The limitations of DNA analysis and other data in identification**

When trying to establish a familial relationship between someone who died almost 100 years ago and a contemporary relative, we are reliant upon the use of DNA. In the absence of detailed dental records and fingerprint information, DNA is currently the most heavily weighted method available for determining the identity of the deceased from this era and context. At Fromelles, very few useful artefacts (i.e. indicating a name and not portable) were found with the Buried. Anthropological data, while useful for determining congruence or otherwise against potential Missing individuals, are not a vehicle for providing precise and accurate identification. Specifically, such analysis provides wide age brackets (e.g. 28–45 years at 95%) and stature estimates (± 3 or 4 cms at 95%). The limitations inherent when using anthropological analysis in identification are summed up by Byers (2008, 16): “One of the most common problems faced by forensic anthropologists is how to make a single determination from ambiguous data,” an issue also discussed by Komar and Lathrop (2006).

Identification of the Buried of Fromelles therefore relied upon the condition and completeness of their mortal remains (essentially their skeletons, dentition and DNA), the survival and traceability of informative genetic relatives (suitable DNA donors on the male and/or female line) and their willingness to participate in the process (fewer than 1% of the British families contacted declined). For further discussion see Cox (2010, 2014).

The results obtained to date (144 of 250 of the Buried were identified by June 2014) are much better than a similar recovery taking place post 1918, where the level of identification was around 20% (Dick-Cunningham 1921 in Hodgkinson 2007).

Mitochondrial DNA was utilized to trace the maternal line, sequencing the hyper-variable variable regions (HVS-I (16024–16365) and HVS-II (73–340) (Howard et al. 2013). The Y-STR, using the 17-marker VNTR marker of Y-filer, was utilized to trace the paternal line. The current databases for Y and mitochondrial DNA are the Y chromosome Haplotype Reference Database (YHRD) and EMPOP (European DNA Profiling Group mtDNA Population Database). Both are relatively small when compared with the National DNA Database (NDNAD). YHRD has 126,931 (Release 46) and EMPOP 34,617 (Release 11).
profiles, compared to 4,869,251 individual profiles and 5,666,786 subject profiles in NDNAD (National DNA Database Statistics, Q3, 2013–2014). Thus the statistics used in establishing match probabilities for the Fromelles Buried were drawn from a much-diminished base and this was compounded by the fact that Y and more especially mitochondrial profiles are not unique to an individual, as it is possible for two individuals who are not apparently from the same familial group to share the same DNA profile (Hohoff et al. 2007). This is a reflection of inheritance patterns over the past 400,000 years of human evolution and may reflect a common familial ancestor. Unfortunately, this cannot be verified without extensive family trees, which are difficult to construct beyond the eighteenth century, and rely on Church records and miscellaneous sources such as family bibles or legal documents of title. For the majority of today’s donors such records do not exist and as such we were wholly reliant on accurate family trees from the early twentieth century to the present day. Given the relative numbers, it was important to establish a baseline threshold for match probabilities. After discussion with an experienced genetic statistician a match probability of 1 in 1000 was decided as the minimal threshold to indicate identification (subject to this being congruent with all the anthropological data – age, stature and where possible in vivo health and trauma indicators, and peri-mortem trauma). This could be derived from a single match of either the Y or the mitochondrial profile or a combined score of both.

As DNA was the only type of data available to this project that could in theory lead to a positive rather than a presumptive identification, the strength of matches was critical to the level of proof that might be attained. The small DNA database available to us to determine our statistics unfortunately resulted in match probability values for our buried soldiers vis-à-vis those of the Missing of a maximum of 1:1915 for mitochondrial DNA, and up to 1:3387 for the Y-STR. Where we had both a paternal and maternal match for a buried soldier, then the two statistical values were multiplied, and this could yield match probabilities of up to 1:6.4 million, which was more acceptable. However, in many cases we only had a donor from one line (family lines with informative donors from both sides were limited, and the match probabilities could be very low, typically < 1:500). Even if a large database were available it would still not have the statistical power of NDNAD due to the commonality of profiles compared to NDNAD unique profiles of individuals.

A match probability of more than 1 in 1000, when combined with other congruent data derived from historical, archaeological, anthropological and genealogical data, may still allow a name to be re-attributed to the deceased. An overriding ethical and professional issue was just how likely that match is to be correct – given the limitations not only of DNA in historic cases, but also of other data sets, such as historical documentation and anthropological analysis. Should the level of proof be required to be “beyond reasonable doubt,” “substantially more likely than not” or something other? The involvement of impartial external auditing...
and expertise in this decision (and in the entire process) was critical. In the majority of cases in this project it was never going to be possible to have strong enough match probabilities for the DNA to attribute identifications “beyond reasonable doubt.” After much deliberation and consultation it was decided to place the level of proof as “substantially more likely than not,” a level used by the Australian military in previous historic cases reliant upon data sets that could never be solely or collectively conclusive in the manner usually achievable in modern forensic cases. This level of proof was recommended by our external QA advisor, Dr Alison Thompson (HM Coroner), who had extensive experience in identification efforts worldwide, and her recommendation was accepted by the FMB as appropriate and achievable. Thus the project did not seek to mislead the public or relatives by asserting that we could attribute the identity of historic cases such as these “beyond reasonable doubt.” To do so would have been misleading and unethical.

**Social versus DNA identification**

Once DNA is utilized, the process of identification – here being to attribute to an individual the name by which they were known during life – shifts from being essentially social and familial to something that exists at a cellular/genetic level. This of course is thereby altered by illegitimacy and adoption, should they occur. While social/familial and cellular/genetic identity may correspond, they may not. This difference is something that families or social groups with missing members do not generally appreciate, and which of course was not an issue where primary indicators of identification were either fingerprints or dental records or where, unwisely, identifications have been attributed by secondary indicators (e.g. estimates of age at death, stature, etc. and associated artefacts). Such characteristics as dental records, fingerprints, medical history and physical appearance reflect the living physical being for whom those basic characteristics have been captured during life, either by happenstance or by routine data recording, rather than relating to the missing person’s molecular genetics (which in most contemporary societies is only routinely recorded for criminals or members of the armed forces). Once DNA is deployed then identification is at the cellular level, and in social terms this may or may not have any bearing on the individual one is seeking to identify. As a part of managing expectations, donor families must be made aware of such a possibility.

**Incidental findings**

It is a given in all cultures and at all times that non-paternity and adoption take place, both within and without wider family groups, and that the rates of both are neither constant nor predictable. A typical estimate for non-paternity is given as 5–10% (Gilding 2005), but this figure has been revised down to 1.9% dependent on the population, cultural group and religious belief (Anderson 2006). There are
unfortunately no figures for the rates of non-paternity in Australia or Britain from
the early twentieth century as there was no reasonably reliable means of determining
paternity until the 1950s with the advent of the ABO blood typing system
(Adams 2008; Sussman 1954), and it was not until the 1970s–1980s that HLA
and DNA-based systems were introduced (Adams 2008; Sussman 1954) and that
paternity could be determined at a statistically significant rate.

Incidental findings (IFs) of non-paternity or adoption are an unavoidable part of
any attempt to identify a large number of individuals. The literature on this complex
issue begins around the time that this project commenced (2008); for details see
of illegitimacy and informal and unrecorded adoption, both within and without
family groups; that are unknown to surviving family members, raise considerable
and in some cases insurmountable obstacles to obtaining identifications by genetic
methods. IFs may also highlight genetically related individuals amongst the
Missing to Donors of whom the surviving family has no knowledge, because
their existence was concealed at the time of their birth and during their own and
their parents’ lifetimes. Where DNA is the most heavily weighted data, such individ-
uals cannot be identified to the name by which they were known in life, i.e. their
social family groups, as their DNA will be different, on one or both lines. In this
project, multiple DNA donors from the same family were employed (where poss-
able) to help mitigate against IFs. However, it was sometimes necessary to expand
further the number of DNA donors from a single family to help establish a common
profile. The process of obtaining DNA samples is essentially in the hands of the
individual donor or the family of the donor. Often the person identified as a
donor and the person with a strong desire to identify their relative was not the
same person; they might not know the other person, or even be aware of their exist-
ence. It was therefore sometimes necessary to double check that the person who
was asked to provide the sample actually did so and was not substituted by
another person. This practice undoubtedly arises from a misunderstanding of the
nature of DNA profiling amongst the general public. For a few cases with a sub-
optimal match probability, autosomal testing of the Buried vis-a-vis a putative
nephew or niece was undertaken, using the 15 chromosomal marker AmpFLSTR
®
Identifiler® kit looking at match probabilities of the individual markers. Combined
with the mitochondrial or Y profile, match probability then either excluded or con-
firmed a match.

The issue of whether or not to disclose IFs to affected families was an ethical
consideration for the Fromelles Project, and after due process it was decided to
follow existing guidelines on the use of genetic data as discussed above. This
recognizes that the risks of discovering kinship discrepancies are not uniform
across space and time (Parker, London, and Aronson 2013, 225). The existence
of anomalies or inconsistencies, and the details of those, were not disclosed to
Donors as it is considered that to do so could negate the potential benefits of
the overall process. Further, not all historical “truths” about the dead and their
relationships to each other and the living are relevant to the public or private interest (Parker, London, and Aronson 2013, 226). That said, it was accepted that exceptions to a policy of non-disclosure might include projects where the potential for substantial psychological or material benefits outweighed the risks, as in more recent mass fatality incidents (Parker, London, and Aronson 2013, 224).

Data protection

A policy of the Fromelles Project (reflecting in part that it was a Board of Inquiry for the Australian Army) was that all case notes, data and tissue samples relating to the Buried and Donors were confidential documents and fall out-with the normal rules of disclosure and freedom of information. As such, disclosing the DNA profile of their former missing relative was prohibited even to confirmed genetic relatives of one of the Buried. This principle potentially prevented such relatives from discovering that their previously Missing relative was not their genetic relative. The importance of safeguarding the confidentiality of records and of processes utilizing personal data of the Buried and of Donors was paramount, and all paper and electronic data were safely stored and backed-up during and after (where relevant) the project’s life. For reasons of confidentiality and the protection of personal data relating to both the Missing and to Donors, all genetic samples and data of both Donors and of the Missing were destroyed at the conclusion of the project, as was set out in the informed consent document. This is in line with ICRC guidelines (2009).

While there is little likelihood that this ruling will be changed in the case of Fromelles, it has to be recognized that there is a considerable push amongst some researchers for changes to national and international ethical guidelines pertaining to the use of genetic samples taken for specific identification (and other) purposes, for other valid scientific research, and of course for improving identification approaches and techniques (Knoppers, Saginur, and Cash 2006). Such pressures can be exerted irrespective of the context of the mass fatality incident and the details of the informed consent given by family members at the point of donation (Knoppers, Saginur, and Cash 2006).

Where requests for access to genetic and anthropological data from individuals (Missing and Donors) arising from this project were received, they have been declined. The relatives of the Fromelles Missing gave their consent for one purpose only, and that is the identification of their possible relative. Despite this, it has to be recognized that the profile database of all Donors sampled during the Fromelles project (926 Y profiles and 894 mitochondrial profiles as of June 2014) represents the largest collection of profiles for a single purpose outside of the YHRD and EMPOP databases. It would, from a research perspective, be desirable to contribute the profiles produced as part of this project to those databases. However, meritorious as it may be, this is outside the scope and intent of the
original consent form and to release such data to researchers would be a breach of donor confidentiality and undermine the basis for informed consent. As such this will not take place unless further informed consent is sought and granted. At the time of writing, several requests had been received from Donors seeking confidential information or DNA profiles either pertaining to them or to their previously Missing soldier. All such requests were politely turned down and the reasons stated.

Images of the dead

The Buried of Fromelles are war dead, and as such, were treated as are those dying in warfare today. Consequently, no images of them, during either excavation or analysis, were initially made public or permitted to be shown in any media coverage of the project. The FMB later decided that images of the Buried could be shown for scientific purposes in approved scientific reports, presentations and papers, where this use was essential to demonstrate something specific. However, this is only permitted where there is no means of identifying the Buried to particular Missing (i.e. all “body numbers” etc., were removed from the images). While this is the policy for the Fromelles Buried, we recognized that many TV and other outlets do show images of the dead from this period and more recently. At the time of writing, the approaching centenary of World War I has already seen a flurry of documentaries on the subject and without doubt many images of the dead will be shown. The media frequently show human remains from archaeological contexts, and that seems to stoke an insatiable appetite, irrespective of the era in which the deceased lived and died, as in the case of those bodies exhumed from mass graves from the Spanish Civil War (Ferrándiz and Bear 2008). When a documentary was made on the Fromelles Project, despite it being made clear from the outset that no images of the Buried could be taken or screened, the production company fought unsuccessfully to have that policy overturned. Perhaps the relevant authorities were too sensitive as images of modern atrocities are readily seen, but as there is currently no agreed protocol or policy about this important subject, each project determines its own rules. Under what circumstances an image of the dead can appropriately be shown, and to whom, is a topic that needs to be discussed widely and agreed at the level of an accepted standard of conduct.

Conclusions

The Fromelles Project, in all stages of its design and implementation, sought to be fully cognizant of, and compliant with, currently advocated professional and ethical guidelines. As would be expected with any project that is the first of its kind, novel areas to consider have arisen as the project developed, and the experience will help inform future projects of this type and contribute to the development of an ethically
robust and defensible approach to the excavation, analysis and identification of our war dead.

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References


Protocol Additional to the Geneva Conventions of 12 August 1949 and Relating to the Protection of Victims of International Armed Conflicts of 8 June 1977 (Protocol I) Art. 32.


Y chromosome Haplotype Reference Database (YHRD). http://www.yhrd.org/