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# **Naming the dead: DNA-based identification of historical remains as an act of care**

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## **Introduction**

Since it was first introduced in the mid 1980s, DNA matching (or ‘profiling’) has become an essential part of the forensic repertoire (Jeffreys et al 1985; Lynch et al 2011). It is increasingly deployed in the kind of events that produce large numbers of fatalities, ranging from natural disasters, transport and industrial accidents, to acts of terrorism and war crimes (Black et al 2010). The ability to link some DNA sequences to individuals with high probability means that identification can be done with greater (although not total) certainty than with other forms of evidence; crucially, it can also be used when bodies are too decomposed or fragmented for other biometric methods of forensic identification, such as fingerprints or dental records, to be useful. The 2009 Interpol guidelines for mass fatality victim identification note that although the “most reliable means of identification are fingerprint analysis, comparative dental analysis and DNA analysis”, any one of which would be sufficient, when there are no fingerprints or dental records, or bodies are disrupted, “DNA may be the primary means of obtaining reliable identification” [Interpol 2009].

As with any technology, the adoption of DNA profiling has occurred within specific social, economic, political and institutional contexts. These contexts have shaped how the technology has been developed, how its use is regulated, and by whom, as well as the fields of public and professional life in which it is taken up (Lynch 2012). Research in the sociology of science and in science and technology studies has demonstrated that as a new technology migrates from the realm of the exotic to the quotidian, it modifies existing social practices, roles and beliefs, and sometimes catalyses the development of radically new ones as well. For a sociologically informed bioethics, empirical knowledge of these social changes is important not only to enlarge our overall understanding of the interactions between science, technology and society, but also to inform normative thinking about the technology itself (Haines 2002; De Vries et al 2006; Rehmann-Sutter et al 2012). For these purposes, the ‘marginal’ applications of a technology, in which less obvious aspects of its use become visible, may be as relevant as the more common ones.

In this paper I consider one such marginal application – the use of DNA matching in the identification of historical bodies – and what a close examination of the beliefs and practices that develop around its use can tell us more generally about the bioethics of DNA-based identification. First I look at the reasons why bodies are identified at all, and raise the question of why identification is pursued when there is no acute need to do so. I then look at a specific example of historical identification, the Fromelles Identification

Project (FIP) undertaken jointly by the British and Australian governments. Drawing on some empirical data from a pilot study of why family members provided DNA samples for matching to a long-dead relative, I suggest that volunteering DNA for identification purposes in this case, and possibly in other instances of mass fatality identification too, can be understood as an act of care directed at the missing person, other family members, and/or the family as a whole. Understanding identification as an act of care means that it can be ethically analysed within the framework of the ethics of care. This analysis indicates some distinctive normative issues for further exploration, including the vulnerabilities of family members donating DNA for matching; these issues may be relevant to other historical identification cases, and possibly to the socioethics of mass fatality identification more broadly.

This part of the discussion is based on pilot work in a planned social, ethical and historical study of the FIP<sup>1</sup>. The pilot work involved sending an email to everyone on the Australian database of people who had offered DNA samples, announcing the study and asking for initial expressions of interest in being interviewed: this generated 116 email responses. Although this first call asked no specific questions other than readiness for interview, many responses were lengthy and gave detailed information about family history, rationales for involvement, the process of DNA donation, responses to success or failure of identification, and so on, and these lengthier accounts have been used as the basis of the discussion in this paper. The email call was followed by semi-structured interviews with 5 of the respondents, selected on the basis of geographical convenience and held in Sydney, Australia in December 2013, in which particular themes identified from the email responses could be followed up. It should be obvious, then, that much of the following discussion is preliminary and necessarily speculative. Rather than leading to firm conclusions, it offers the beginning of a qualitative exploration of the social and ethical aspects of novel biotechnological practices, and points towards areas where further research will be necessary.

### **Why identify bodies?**

The identification of unnamed bodies after a mass fatality event is generally considered important enough to be worth the large amount of effort, resources and time it consumes. Mass fatality events and the subsequent rescue and recovery operations involve a very wide diversity of agents and agencies, who are likely to have distinctive, often conflicting, motivations and rationales for wanting to identify who has died. Modern states and state agencies generally have an interest in and responsibility for monitoring what happens to their citizens. Additionally, in cases like the Fromelles bodies, identification may be driven by a state's need to underwrite particular historical narratives. For the military, as a statement by the Australian Department of Defence on the Fromelles identifications put it in 2010, identification of war

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<sup>1</sup> In this paper, 'the FIP' refers to the excavation, identification and reburial of bodies in the overall Fromelles Identification Project which officially ran from 2008-2014. 'The study' refers to the research into the ethical, social and cultural implications of the FIP.

dead can mean being able to “present the names of these brave ... soldiers to the nation” and in so doing consolidate the bond between the armed forces and civilian society. In other instances, identification of the dead may be needed to support prosecutions for negligence or establish survivors’ claims for compensation, while for human rights and international law bodies, the identification of mass dead using DNA matching has become a standard tool in the post-conflict prosecution of war crimes.

Accounts of mass fatality (or disaster) victim identification<sup>2</sup> give a central place to what is usually termed the *humanitarian* rationale: that is, to provide information about the death to the members of a victim’s family. Thus the International Committee of the Red Cross guidelines for best practice refer to “the primary need inevitably cited by the families of missing persons is the right to know what happened to their relatives” [ICRC 2004 p 4]. The importance of this knowledge to families is also embedded in international law: by Additional Protocol 1 to the Geneva Conventions of 1949, families have the right to know the fate of their missing relative (Protocol Additional to the Geneva Convention of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts, of 8 June 1977, Art. 32).

Families’ need to know what has happened to one of their own also has more than one ground. The primary, and perhaps most intuitively obvious, is the emotional imperative to know the fate of a loved one. Knowing that a relative has died in a mass fatality event is of course terrible knowledge, but certainty of death is generally thought to be better than the ongoing emotional anguish of fearing but not knowing. Another publication of the ICRC states that “[t]he only relief for [a missing person’s] families is receiving credible confirmation of the death and knowing that the remains of their relative have been or can be treated with dignity.” (ICRC 2009, p. 4) There are also often mundane, but pressing, legal and financial reasons why confirming the identity of a dead person is important. Death has to be confirmed before families can have access to a person’s estate, for pensions or life insurance policies to be paid out, for compensation claims to be brought, and so on. Clarification of the social status of a widow or orphan becomes increasingly important as time passes; for a widow or widower to remarry, for example, there needs to be reasonable certainty that their spouse is actually dead. And for both families and communities who have experienced loss in mass fatality events, it is widely held that the ending of uncertainty about the fate of the missing supports subsequent recovery and the return to something like normal life.

Where the ‘recent dead’ are involved, the grounds for seeking identification by whatever method possible seem clear and compelling. Not all cases involve the ‘recent dead’ though.

### **The Fromelles story**

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<sup>2</sup> Although disaster victim identification (DVI) is a more commonly used term, in this paper I use ‘mass fatality identification’ in order to include victims of anthropogenic atrocities as well.

In 2007, following an investigation undertaken by an amateur historian, several mass graves were discovered in Northern France that were suspected to hold the bodies of Australian and British soldiers from the First World War battle of Fromelles on 19 July 1916 (Lindsay 2007). An initial excavation in 2008 by a team from Glasgow University confirmed that the site contained between 200 and 400 human remains, probably buried by German forces after the battle. Knowing that both British and Australian forces had been involved, the governments of those countries jointly funded a full excavation of the site between February and October 2009 (Summers 2010). It has been the policy of the British government since the First World War that the bodies of military personnel killed in combat should be recovered, and where possible identified by name (Heffernan 1995). However, while it was clear that the Fromelles remains were probably Australian and/or British soldiers, in most cases identification by name could never have been done using standard forensic methods alone. No fingerprints or adequate medical or dental records existed, and although the excavation of the bodies retrieved many artefacts as well, unambiguously identifying items such as identity discs usually had not survived; in any case, often body comingling was such that objects could not confidently be associated with a body or body part. The decision was made that the Fromelles Identification Project would use DNA profiling, in combination with other forensic methods, to pursue the identification of the remains as far as technically possible (Cox 2010; Scully and Woodward 2012). Accordingly, DNA was extracted from the bones of the excavated remains before they were reburied in single marked but anonymous graves (see Cox 2010, and Cox and Jones in this issue).

Identification by DNA requires the sample from the unidentified body to be matched to other DNA sequences, ideally a direct sample taken from the person while alive, or failing that, to samples from genetically related family members. For soldiers of the First World War there were of course no stored samples, and many of the men recorded missing at Fromelles were too young to have left direct descendants. DNA matching was therefore dependent on having genetically related living family members to volunteer familial samples to match to DNA extracted from the remains. This presented the main difficulty of the FIP: finding so-called informative relatives either on the direct male line (where relatedness can be traced through similarity of DNA sequences on parts of the Y chromosome known as short tandem repeats, STR) or on the direct female line (where the same can be done through analysis of mitochondrial DNA; see Jones (2010) for more details). Following publicity campaigns and direct appeals from the armies of both countries, over 2000 individuals came forward. By April 2014 144 bodies had been identified by name.

### **Fromelles media accounts and interviews**

Identification procedures, whether using DNA or another method, promise “to reattach personhood, signposted by a name, to physical remains and thereby to reconstitute the identified person as a social

and political subject” (Wagner 2008: 119). The potential social and political subjectivity of the Fromelles bodies was significantly attenuated by time. Yet the potent appeal of ‘reattaching personhood’ to these bodies seems clear from the initial public response to the FIP (over 3000 names are listed on the Australian Fromelles Relatives Database, <http://www.army.gov.au/Our-work/Unrecovered-War-Casualties-Army/Fromelles/The-Fromelles-project>; Scully and Woodward 2012).

Unlike the cases of recent mass fatalities described earlier, for these historical dead there was clearly no urgent need to assign names to remains. Families knew that their relative had died in the First World War and in most cases knew or suspected they had fallen at Fromelles (in fact, this had to be the case in order for the families to volunteer DNA samples). At the same, however, these deaths were recent enough that the bodies occupied an ambivalent social and historical position. Although the excavation was undertaken by archaeologists, the knowledge that there might be close family members still alive meant that the remains were not treated like archaeological finds, and the “sensitivities of the living” were taken into account throughout (Loe 2010, p.31). No images of the remains have been released, for example. These sensitivities extended beyond the relatives who might have known the dead man in life. Despite the passage of time, the families of those buried at Fromelles were conceptualized as “waiting to discover whether their relatives will be among those who might possibly be identified amongst the remains” (Loe 2010, p. 28; Corfield 2010: 3): they had been waiting since 1916 for material evidence of a death. A similar idea of a ‘waiting family’, generationally removed from but still emotionally connected to the deceased, is also found in the identification of Finnish soldiers killed in the Second World War, whose remains were identified by DNA analysis. This is another case of the identification of military killed in a battle that still evokes powerful national feeling (Palo et al., 2007). Public attitudes to the recovery and identification of military dead versus the civilians who may have been killed in the same conflict can often be highly divergent, for reasons that have not yet been rigorously explored but are likely to reflect the romanticization of the military and military dead, the particular political claims being made around the conflict, the ‘war culture’ (Winter 1992; Wilson 2012) that reflects local responses to different conflicts, and so on.

Popular accounts of the Fromelles identifications in both the Australian and British media reinforced the image of the waiting family, emphasising the potency of the families’ longing to have a positive identification of their relative’s body. One Australian, who was too young to have known his dead relative, was described as achieving ‘closure at last’. He was reported as saying that he had always felt that his great-uncle ‘wanted to be found’ and that he himself ‘would have been shattered if we hadn’t got an ID’ (Smith 2010). Most of the media reporting also overemphasized the role that DNA profiling, above other forensic identification technologies, played in the FIP. The press gave an account in which it was ‘modern

science', in the shape of cutting edge DNA profiling, that had 'united the pair' and it was scientists, rather than historians or archaeologists, who had identified the 'lost Diggers of Fromelles' (Totaro 2010).

Media reports, of course, shape a story in particular ways in order to highlight desired aspects of the narrative and downplay others. What was written up as the families' overwhelming urge to identify the "lost Diggers" may be less an accurate reflection of the families' actual experience than a construct born of the media's desire for a compelling human interest story. The number of people who did come forward as potential family members to volunteer DNA, however, suggests there is more to it than that. As already mentioned, for the qualitative study of the social, ethical and historical aspects of the FIP I made email contact with over 100 individuals. In responding to a query about willingness to be interviewed in the future, a significant minority of these (about a third) gave additional details about their involvement. Where they outlined their reasons for taking part, these were more than just curiosity about a long lost relative or interest in being part of a high profile and prestigious national project. Many email respondents indicated a powerful emotional investment. For example:

*"[The Army representative] told me that as I was a direct female descendant of Alfred's sister, I and my siblings were all candidates for DNA donations if we were interested. I have to tell you I literally jumped around the living room for several minutes after reading her message and then promptly rang everyone I could think of."* WB [email]

The 5 pilot interviews, with people in or near Sydney, were able to probe more deeply into their reasons for taking part. These interviewees also spoke of the importance of their involvement:

*"[Being informed of the successful identification] was just amazing...It was like winning the lottery as far as I was concerned. Skin was tingling, hairs standing up..."* GB [interview]

One asked "Who or what do you feel you are mainly doing this for?" The responses tended to give more than one 'primary' reason: two said they were doing it for the dead soldier, 2 for the family in general, and 2 for a named member of the family:

*"The thought of him being just left in the mud, getting absolutely no recognition for what he had done...he was a young man, he would have liked recognition."* JCV [interview]

*"The primary objective was that mother would have liked this."* LM [email]

### **The dead as the subject of care**

Although as noted previously the material drawn on is limited, one distinctive feature of both emails and interviews was that of the respondents who gave their reasons for taking part, about half articulated this in terms of 'looking after' or of care:

*"I ended up with all this [the involvement in the FIP] because [an aunt] said to me you have it, you'll look*

*after it, you'll look after him."* JP [email]

*"I thought, well, someone's got to care about it. It's not right if no one cares enough about, about them, about him."* JV [interview]

Bearing in mind that the email responses and interviews may not be representative of all families involved in the FIP, 'care language' was used often enough and expressed powerfully enough that it is worth exploring further. The use of care language suggests that identifying a missing relative, even when there is no practical necessity to do so, is emotionally and morally necessary to family members because doing so represents care. In the literature of care ethics, care is variously described as a normative value, as a practice, and as a broad framework for reconceptualizing interpersonal and social relations in order to make ethical judgements about them (Held 2006). As a normative value, care introduces a distinctive standard by which these ethical judgements are made. As a practice, care is relational in that it is something that is shown by one person towards another (person, or sometimes object): there is a carer and a subject of care. In the case of the FIP, the carer is the person who becomes involved in the project and who usually then donates DNA or motivates others to do so. But to whom or what is care being shown?

The obvious candidate for the subject of care here is the dead person himself. This could be linked to an explicit belief in survival after death, but it need not be. The rich anthropological and sociological literature on attitudes and beliefs about death describes a wide range of ideas that can be held about the status of the dead, and a concomitant variety of associated practices, some of which treat the dead as still *mattering* even in the absence of a supporting metaphysical or religious commitment. It is worth noting that of the 4 face to face interviewees who said they were involved in the FIP "for" a dead person, 2 also denied any belief in personal postmortem survival:

*"I'm doing it for George. [Interviewer: How does that work?] I dunno! I'm a bit of an agnostic, I don't believe in life after death, you know."* JV

Philosophical opinion on whether the dead can be meaningful subjects of care is more divided. While bioethics has paid a lot of attention to the *dying*, their status as moral agents and their capacity (or lack of it) to make autonomous decisions, it has shown markedly less interest in the *dead*, except where the dead body's components are of material use to the living in medicine and research, or where a person has expressed wishes about what should happen to their body and its parts after their death. The larger philosophical literature on death, on which bioethics could draw, considers the ethical status of the dead largely in terms of whether dead persons can suffer harm or have interests that can be damaged. This literature has tended to address issues that have distinct legal implications, such as the possibility of posthumous libel, or misuse of tissue (see e.g. Holm 2001; Masterton et al 2007). One of the most



influential lines of argument here says that the dead cannot have interests, because (by definition) the person whose interests could be harmed no longer exists. Although there might be reasons to protect a person's reputation posthumously, for example, it's only because damage to their reputation might hurt or embarrass their surviving relatives: "the interests a person had before death only survive as interests if they are carried on by living bearers", as Callahan puts it (1987, p. 344). According to this line of argument it makes no sense to suggest that attempts to identify the dead could have any relevance to care, because there is nothing *there* to be cared for. If identification is to be understood as a practice of care, then we would need to look somewhere else for the subject of that care.

But there is another school of philosophical thought that suggests the subject of care could be the ante-mortem person, i.e. a person as he once was, even though he is now dead. The argument here is that "a life includes much that does not take place within the boundaries of [a person's] body and his mind, and what happens to him can include much that does not take place within the boundaries of his life' [Nagel 1970, p. 78]]. From this perspective things that happen after a person's death, like the proper identification and burial of the body, could still fulfil or flout interests that were held in his lifetime (Pitcher 1984; Scarre 2012). In this way, events postmortem cast either a backward shadow or backward light on the *meaning* of events in that life. From this point of view, identifying a family member and burying him with a name and in a manner that the family could reasonably imagine he would have preferred, is to care for that individual and his life in memory, by ensuring that the biography through which someone is remembered has the ending that casts the best backward light on the life that's gone. Here the subject of care is the memory of that person, held in the minds of living others. But there is also an important in which to act in such a way that the meaning of a life can be changed is to care for that person's life, and not just for the memory of that life. Casting the best backward light on a life would still count as meaningful care even if there were no one left alive to hold a memory of the dead person.

### **The family as the subject of care**

Although the *identification* is of the dead person, the intended *recipient* of the care may not be that person at all, but the family to which he belonged in life. Directed at the (present day) family rather than the deceased relative, identification could potentially serve as an act of care in several ways. (i) For example, some respondents experienced involvement in the FIP as consolidating the family identity. Taking part in the FIP was not simply a matter of posting off a buccal swab to a lab to be analysed. It generally meant that volunteers had to make contact with several other family members and to construct a family tree with the help of a project genealogist. As a result, it could lead to previously obscure parts of the family history being clarified, or to unknown relatives being discovered; existing family ties could be strengthened and new ones formed. A family that had become geographically scattered or fragmented because of conflicts in previous generations could be reunited through one person's involvement in the

FIP.

*"I'm a whole lot closer to more of my family, cousins. Got more information, more explanation about some of the things in my family."* LM [interview]

*"I first became aware of the Fromelles project through an article that I read in the Australian Army Newspaper. Around the same time, I reestablished contact with my father after a 20-year absence. It was my father who told me about X, who had died in WW1... I decided to register with the project and donate a DNA specimen. This meant a great deal to me and to my father. ... My involvement in the project was especially significant to me and to my family. It helped to bridge a gap between my father and I while, at the same time, allowing us to bridge a gap with our family's past."* DR [email]

Some email respondents said that their involvement had resulted in the "healing" of divisions between relatives:

*"I think identification would be a healing thing for the rest of the family, the ones that are still alive. I have a deep need to try to heal the family...it's quite strong."* JP [email]

(ii) It's also possible for the act of identification to be directed not at the family as a whole, but at an individual family member *other* than the dead person himself. This need not be a living family member either. When asked why they wanted to identify a lost relative, two interviewees said that it was "for my mother", who in both cases was a younger sister of the dead man. Similar comments were also made in a number of emails. The interviewees went on to explain that the mother was herself already dead, and interestingly, in both cases, they denied any personal belief in life after death.

*"It's for my mother which absolutely – I can't...my mother's dead. I don't believe in life hereafter. I still feel I might be doing something for her."* JCV

(iii) Beyond this care for the family's identify or for another family member, the identification endeavor could also be an indirect means by which people expressed or performed the fact of their care for the family indirectly; through the investment of time and effort they put into the quest they can prove (to themselves, to each other, and to the outside world) just how much their family and its history *matters* to them.

And (iv) finally, through their actions the people taking part in the FIP could be engaging in a form of self-care, maintaining their own self-image as the kind of person who cares enough about their family to help find one of its members, however distant:

*"I like to think of myself as someone who does care enough to, you know, go the extra mile."* RJ

### **Ethics of care**

Describing the giving of DNA samples as an act of care is not a claim that this is *all* it is, but rather that this analysis uncovers a perspective, derived from the participants' own discourse about their involvement, that highlights hitherto overlooked aspects of the practice. It also makes it possible to examine the volunteering of DNA samples in the FIP within a care ethics framework. The ethics of care approaches (bio)ethical questions through an analytical focus on how people care for, and care about, each other. It foregrounds certain morally relevant features, such as a relational ontology in which people are constituted as subjects through relationship with each other; the affective elements of moral life; the asymmetries of power inherent in most relationships involving care; and questions of how responsibilities and obligations within relationships are assigned, accepted, or rejected. The value of care ethics as an approach to morally troubling situations lies not so much in its promise to provide universal or even generalizable answers (and the ability of care ethics to do that compared to other normative approaches is still debated), but in the way its particular viewpoint "engenders a radically different set of models and normative concepts" (Pettersen 2011, p 52) than are available to other ethical theories. Advocates of care ethics hold that these models and concepts give unique insights that other ethical approaches miss out. Furthermore, they believe that these additional insights are ethically useful: they enable a more comprehensive understanding of what's going on, and thereby help form better normative conclusions.

Early work in the ethics of care tended to focus on those areas of life where practical, hands-on caregiving and receiving is most visible, which is why it has flourished in healthcare and nursing ethics and in disability issues, where it has also been enriched by feminist ethicists' sensitivity to the gendered social expectations of care within domestic and clinical contexts. The ethics of care has less often been used to examine novel, sophisticated biotechnologies, and rarely applied outside the clinical or domestic domain. Nevertheless, care theorists have long held that the approach has utility outside these areas, and more recent work has tried to move beyond the traditional forms of caregiving to consider global, public and political issues, and to widen the scope of interactions to include international and policy relations (Barnes 2012; Kyle 2013). Extending care theory beyond the home or clinic has required it to be reconceptualized in less explicitly interpersonal terms than before. Joan Tronto's description of care as "everything we do to maintain, continue, and repair our 'world' so that we can live in it as well as possible" (Tronto 1993: 103) has been criticized for diluting the distinctive relational features of care and care ethics, but it does have the advantage of extending the repertoire of behaviours that can be analysed in terms of care, and the kinds of interactions (with the nonhuman or nonliving world, for example) that can be thought of as relationships involving care. Late developments in care ethics have also extended the catalogue of ways in which care can be expressed. So for example, giving care in the literal sense is a fundamentally hands-on, embodied act. But as Barnes notes, other forms of care are less embodied. Although the DNA-based identification of human remains involves material practices and procedures

(taking a buccal swab, removing and pulverizing pieces of bone), family members who offer their DNA for matching never come into physical contact with the body being identified. The only care that they can offer, whether to the dead individual or to the family as a whole, is distanced and, ironically (since the practice centres around a body), profoundly disembodied. In these circumstances care becomes the disembodied 'taking care of' rather than embodied 'care-giving' (Barnes 2012, p. 49).

### **Ethical issues in mass fatality identification and the ethics of care**

The principles and practices of mass fatality identifications are too novel to have yet been subjected to extensive socioethical analysis. There has been a focus on the practical provision of guidelines on appropriate behaviours towards bodies and families, while more recently, in the specific context of DNA matching, ethical concerns around incidental findings and the confidentiality of and access to repositories of DNA samples have been discussed (London et al 2013; Parker et al 2013; Knoppers et al 2006; Caenazzo et al 2013). The full range of ethical questions and social consequences, in different mass fatality settings and across cultures, is yet to be fully characterized. Earlier, I suggested that thinking of the FIP identifications as acts of care helps to foreground new aspects of ethical concern. It also places some quite familiar ethical issues within a distinctive framework that pays particular attention to exposing power relations and vulnerabilities inherent in asymmetric relationships, tracking responsibilities that might otherwise be overlooked, and bringing these to normative evaluations of social practices. In this section I discuss some of these areas in the light of care ethics, repeating here the caveat that this discussion can only be speculative; to draw any firmer conclusions requires further empirically grounded knowledge.

**Disclosures and divisions.** One of the paradoxes of identifications based on DNA matching, where the value given to the unique identity of the individual is paramount, is that returning a name to an individual is often only possible by exploiting the *non*-uniqueness of family genetic connections. The very possibility of identification here relies on the fact that some forms of genetic information are *not* unique to individuals but are shared by related others. Genetic information is widely recognized as raising distinctive, and distinctively complex, ethical questions precisely because it is never just information about a single person – but equally, it is never just information about a family unit either. Which kinds of genetic information can or should be shared with others, when and how it should be shared, and how differences of opinion can be managed responsibly, are all questions that have received extensive social scientific and bioethical scrutiny over past decades (see e.g. Rehmann-Sutter and Mueller 2009). Most attention has focused on experiences in the clinical setting, when genetic information about a patient has health implications for other members of the family. This is not the kind of genetic information with which profiling is concerned, and the techniques currently used for DNA matching are unlikely to throw up incidental findings with implications for family members' health status.

However, the ethical sensitivity here is not so much about what might be revealed about the health of family members, but also what genetic information reveals about family relationships in themselves (Parker et al 2013). Genetic counselors and family history enthusiasts alike know that across generations, it is common to find genetic relationships that are ‘not as reported’ – usually when there is an incidental finding of previously unsuspected non-paternity or adoption (Lucassen and Parker 2001). Where the context is identification of the recently dead, the small risk of such disclosures is unlikely to outweigh the immediate emotional and practical need to know. In historical identifications however, where priorities are different, families may need to weigh up the risk of such incidental findings and their implications before volunteering a DNA sample. Of the 5 Fromelles donors I interviewed, none remembered having had the potential discovery of non-paternity or adoption being raised before they agreed to take part <sup>3</sup>. Although 3 interviewees said it would not have been a problem for them (“There’d be no embarrassment, it’s too long ago. Makes us all a bit more interesting really”), one did indicate that, had she known of it beforehand, it might have affected her decision to participate in the project. Another thought that:

*“I can see it would be shocking...It could upset people, upset a whole family.”* MB

The chance of potentially disruptive discoveries like this calls for particular prudence to be taken in cases where, as suggested earlier, identifying the remains of an ancestor comes with the hope of bringing together or ‘healing’ a rift in the present day family.

A small number of email respondents said that there had been a difference of opinion within the family about whether to participate in the FIP, with some relatives being sceptical or hostile. There are many reasons why people might have preferred not to take part. They may simply not have been interested enough, have found the sampling procedure confusing or inconvenient, been put off by unfamiliarity with the technology or suspicious about what would be done with their stored DNA in the future, or believed that the dead should be left undisturbed. Some may also have feared that known or suspected non-paternity would be exposed. Whatever the reason, most people with reservations about participation would just not have come forward as DNA donors. The problem here is that, although genes are shared across genetically related family members, not all genomes are equally useful for identification purposes. In the FIP (and this will be true for many historical identifications) it was necessary to sample for informative DNA from several family members with specific genetic relationships to the unknown. There is potential for disappointment or even discord between family members if, for example, a person with a strong wish to find their missing relative was prevented from doing so because they were dependent on DNA from another family member who was dead, could not be traced, or who refused to be tested.

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<sup>3</sup> This does not mean that the issue of incidental findings was not raised, only that participants did not remember it.

*"I was advised a nephew and niece could provide DNA but I would need to find a male DNA donor from his father's brother's line. I am still attempting to track down a prospective suitable donor. At least two of his nephews are since deceased so I need to hurry myself up so I don't miss the window of opportunity to have DNA samples taken."* JS [email]

*"My father was his brother and as I am female was not considered a direct descendant for DNA purposes. One male died two weeks prior to me contacting his family and another was not interested in the project as it included DNA. This was a crushing blow to me as I am heavily involved in my family history."* JET [email]

If identification is understood as an act of care, a refusal by some family members to be involved can be taken by others to imply a lack of care. In one interview the participant described a relative's refusal as: *"...awful, just awful. I felt so let down. How could he not? Even if it doesn't matter to X, it meant heaps to us!"* LM [interview]

***Geneticization of personal identity and of the family:*** The rapid, often radical changes in the concept of the family, identity and relatedness in modern societies are at least partially propelled by innovations in technologically assisted reproduction: for example, where same sex parents have children through gamete donation, and these new forms of parenting and family structures become legally recognized and socially accepted. In apparent tension with these shifts towards more diverse and often nongenetic forms of family, however, is the way in which the power of biomedical technologies and the authority of genetic knowledge combine to reinforce the geneticization of 'family' as constituted by (a limited set of) genetic relationships. Because only genetically related family members, whose exact place in a genealogy can be defined in the terms of current genetic science, are informative for DNA-based identification, the significance both of *genetic links* and of the existing *categories of reproductive relatedness* are strengthened, while other forms of family relatedness become more marginalized. An increase in the routine use of DNA-based identifications is therefore likely to reinforce further the status of the genome as the most important, or even only, constituent of both individual and family identity (Haines 2006; Hauskeller 2004; Zwart 2009; Nordgen and Juengst 2009).

Like the ethics of disclosing genetic information, the social scientific discussion of geneticization has also largely been given over to the effect of clinical or developmental genetic knowledge on thinking about personal identity, human nature, disease aetiology, and so on. Consideration of biotechnologies used in other, nonclinical contexts suggests that genetic knowledge is understood and interacts with non-genetic knowledge and practices in diverse ways, and the form that takes geneticization in these different settings may be distinctive (Hedgecoe 2001; Novas and Rose 2000; for the use of genetic information in ancestry tracing, see Tutton 2002; Nelson 2008; Oikonen 2013; Scully 2013; for its use in challenging or claiming

ethnicities, see Simpson 2000; Tallbear 2013). For DNA-based mass fatality identification, there is work to be done to understand the meaning of its necessarily highly geneticized understandings of family both in terms of largescale cultural understandings of relatedness, and for family members involved in identification processes. An often overlooked point, for example, is that in DNA matching the partner of a missing person, who is generally not genetically related, will be excluded from the category of ‘family’ even when he or she is legal next of kin. Adopted children or siblings also encounter exclusion from the geneticized family in mass fatality identifications, as is the growing number of people born through gamete donation. These individuals, who are socially and emotionally part of the family but whose DNA is ‘useless’ for matching purposes, may fully comprehend the genetic reason for their exclusion but still find it troubling, especially if the giving of DNA for matching becomes accepted as a way of demonstrating family care.

**Normalization:** Improvements in technical accuracy and speed, and significant reductions in cost, have all encouraged the rapid normalization of DNA matching as the ‘standard of care’ in organized responses to mass fatality events. The normalization of the practice has implications for *inter alia* its social and cultural meaning to different agents, public expectations of when it will be used, and the degree of ethical scrutiny to which it is subjected. In turn, these meanings and expectations help generate an emerging social consensus about the appropriate behaviours and decisions of individuals, families and agencies in these situations. If a willingness to provide DNA for matching becomes synonymous with showing care for the family and its members, then not only will the pressure of the expectation to donate increase on individuals. Meeting these expectations will lead to increased demand for state or private investment of resources in identification work.

Although there is a general consensus, as noted earlier, that families and communities benefit from identification of the missing or mass dead, there are circumstances in which the benefits may not outweigh the costs. These may be economic: if the number of dead is very large, or the location of the disaster inaccessible or dangerous, it may be that the costs of identification, often borne by the state, are too high<sup>4</sup>. The onus would then be on the state agencies to explain why public expectations of the state’s norm of responsibility towards and care for its citizens should not be met. In other scenarios, it may be the social and emotional costs of the identification process to the families involved that should raise questions. I discussed earlier the risk of exposing non-paternity or other unexpected genetic relationships

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<sup>4</sup> For example, the crash of a Norwegian military aircraft in March 2012 on a mountainside in Sweden led to an operation on challenging terrain in two phases that recovered approximately 3600 body parts. Identification work was performed on fragments above 100g in weight, a process which cost approx. 15 million SEK and which required significant central resources to be made available to the local authorities (Malin Masterton, unpublished manuscript).

through DNA-based identification. Revelations like these, which occur whether or not the identification attempt is successful, may have repercussions for the family long after the identification process itself has closed.

A different kind of problem is presented by events in which bodies are very fragmented and widely dispersed, as was the case in the attacks on the World Trade Center in 2001. Here the actual identifications of individuals, represented by numerous body parts, are multiple and take place over a period of months or years. In the WTC identifications, while some families wanted to be informed every time a new body part was positively identified, others are reported to have found the successive notifications very distressing, to the extent that it hampered their ability to come to terms with loss (Shaler 2005). Particular tensions arose when family members disagreed over whether every single body part should be identified and next of kin notified each time. A similar situation was encountered in the identification of disrupted and dispersed remains in Bosnia (Wagner 2008). As with the identification process overall, a refusal by some family members to agree to or be involved in identification of every single retrieved part may be seen by others as evidence of indifference. The ability to “give a name to” the tiniest scraps of tissue is a new problem that is unique to DNA-based identification methods, and that requires careful consideration of the benefits and costs, to families and communities, in developing appropriate guidelines and policy.

There are usually convincing emotional and practical reasons for the rapid identification of the recent dead in disasters. The reasons for identification of the historical dead are less obvious, but were clearly compelling to the families who participated in the Fromelles Identification Project. Nevertheless, in either situation, there is a risk that if the less positive outcomes of DNA matching for identification are not clearly identified and articulated as part of the relevant ethical and policy deliberations they will not be given appropriate consideration, against a background in which DNA-based identification is being (or already has been) normalized as the ‘standard of care’.

### **Mass fatality identifications, vulnerability, care**

One task for a sociologically informed bioethics is to analyse what happens as life science technologies become integrated into, as well as sometimes disrupting, existing social practices and moral understandings. A knowledge of the specific social, cultural, political and other factors shaping these movements of integration and disruption is essential in order to clarify, and where necessary challenge, the normative claims and expectations that become associated with the technology’s use. For DNA matching identifications, producing ethically sound analyses and practicable guidelines requires that we know not just how this technology is used in different situations, but what its use means to different audiences and agents in each context.



The sheer diversity of events in which there are large numbers of deaths makes it hard to generalize about the socioethics of using biotechnologies like DNA matching to identify the dead. Each type of event mobilises different mixtures of motivations, rationales for and priorities within identification. Compared to identifications after natural disasters, major accidents, or war, the identification of long dead and generationally distant remains in the FIP may seem trivial; at the moment it is genuinely unclear whether similar situations are likely to arise in the future, and if so whether the decisions and procedures of the FIP will provide any kind of precedent. Nevertheless, by examining historical identifications like the FIP, it is possible to identify ethically and socially salient features of the process that tend to be obscured by other overriding priorities in the identification of the more recent dead.

That a significant minority of participants in the FIP used the language of care to talk about the involvement suggests that, for them at least, it served as a way to demonstrate love, responsibility and commitment to both living and dead family members. It may be that functioning, in part, as a practice of care is unique to historical identifications, or it may be that it is present but less prominent in the contemporary events. Both situations carry implications for practitioners, regulators, and counselors, as well as the individuals most directly involved in decision making. More research is clearly needed here.

This discussion has highlighted the capacity for a care ethics approach to draw out ethical features of interest that may otherwise be missed. One of these is the moral significance of the differential vulnerabilities experienced by the various actors in DNA-based identifications. Although the ethics of care is founded on a relational ontology in which moral agents always operate within relationships, it does not take a naively positive view of the nature of relationality; it does not assume that because a relationship exists that it is necessarily one of equality or benevolence. As Barnes notes, “care cannot be separated from other aspects of interpersonal relations that embody gendered expectations, power relationships and the potential for abuse as well as nurturing” (Barnes 2012, p. 38). So the perspective of care is concerned not just with the fundamental relationality of moral behaviour, but also the ethical consequences of the fact that power and vulnerability are unevenly distributed in human relationships, and especially in relationships of care.

These asymmetries leave certain members of relationships or relational networks, at certain times, more vulnerable to harm than others. Today’s organised responses to mass fatality events are technically, legally, procedurally and politically complex. As much as the catastrophic events themselves, these complexities leave families and communities vulnerable to the power of a range of external authorities, including the epistemic authority of science and of the law to assign or withhold an identification (Turney 2010; Evison et al 2012; Williams and Johnson 2008). Families and communities are vulnerable to exploitation for economic, political and ideological purposes, and to the emerging social expectations of

how those involved in this kind of event should act, the choices they should make, whose needs should be taken into consideration or prioritised, and so on.

At this stage it would be premature to attempt to draw out any specific implications for policy or practice from this work on the FIP. It can be argued, however, that the acknowledged diversity of experiences and viewpoints of those involved in mass fatality identifications means that input from the fullest possible range of stakeholders will be needed to inform policy making, and that these stakeholders should include those involved in what I have called more marginal uses of the technology. Better knowledge of how the provision of genetic material in these and other circumstances becomes freighted with social and moral meanings should contribute to ensuring that the procedures of identification work are ethically sound and socially acceptable.

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