

DNA Testing for Family Reunification and the Limits of Biological Truth

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Abstract

As nation-states make greater efforts to regulate the flow of people on the move—refugees, economic migrants, and international travelers alike—advocates of DNA profiling technologies claim DNA testing provides a reliable and objective way of revealing a person’s true identity for immigration procedures. This article examines the use of DNA testing for family reunification in immigration cases in Finland, Germany, and the United States—the first transatlantic analysis of such cases—to explore the relationship between technology, the meaning of family, and immigration. Drawing on our analyses of archival records, government documents, and interviews with immigration stakeholders, we argue that DNA testing is not conclusive about the meaning of family. While the technology may facilitate decision making for both would-be immigrants and state officials, our study shows hesitancy among the latter to let DNA testing make the final determination. We introduce the concept of social validity—whether the interpretation of test results matches social or political meanings in a given local context—in order to make sense of the complexities and challenges of

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DNA testing in practice. We show that DNA testing is not just a technology of belonging or a way to claim citizenship rights. It may also enable exclusion and denial of rights.

Keywords

DNA testing, family reunification, immigration, biotechnology, biological citizenship

Introduction

Nation-states have long subjected migrants to a diverse range of medical and biological examinations to evaluate their entry rights. Government officials have used these procedures to regulate movement, verify migrants' identities, and protect public health. For example, in places such as the United States, where exclusionary legislation sought to limit immigration beginning in the late 1800s, officials conducted health examinations in an effort to ferret out undesirable immigrants (Bateman-House 2008; Dowbiggin 2003; Fairchild 2003). Starting in the late nineteenth and early twentieth centuries, immigration officials used fingerprints and photographs attached to passports to identify people (Torpey 2000). Altogether, biological information was used to distinguish between legal and unauthorized, wanted or unwanted, and healthy and infirm immigrants. As such, these endeavors became technologies of population management and control.

Today, biotechnological procedures are widely used in the context of immigration and international travel, allowing for increasingly more sophisticated forms of identification and surveillance. Examples include biometric passports and iris scans to identify individuals at border points of entry (Aas 2011), DNA and isotopic analyses to evaluate asylum seekers' countries of origin claims (Tutton, Hauskeller, and Sturdy 2014, 2016), and parental tests to verify biological relatedness in family reunification procedures (Barata et al. 2015; Heinemann et al. 2015; Grandos Moreno, Ngueng Feze, and Joly 2017). In addition, medical diagnostic rapid tests are used at international airports to prevent the spread of diseases and to protect citizens of a given country against infectious pandemics (Bitar, Goubar, and Desenclos 2009). With the increased number of people on the move—refugees, economic migrants, and international travelers alike—coupled with growing anti-immigrant sentiment in western countries, particularly

in the United States and the European Union (EU), biotechnologies are playing a central role in border control and immigration procedures.

DNA profiling technologies, in particular, have become crucial elements of immigration procedures. Even though border control officials still use older technologies such as passports and fingerprints for entry (Cole 2001), DNA testing has become the new “gold standard” for identifying individuals (Lynch et al. 2008). Proponents of DNA testing argue that a person may make false statements or present forged documents, but a DNA test provides a reliable, objective, timely, and cost-efficient way to reveal the truth about oneself. The theoretical possibility for such clarity and certainty explains why immigration authorities advocate DNA analyses for determining the veracity of familial claims in family reunification cases. Family reunification is the process of uniting family members living abroad with relatives who are citizens or hold residence permits in a given country. Every country defines eligible family members differently; however, most policies include unmarried minor children and spouses. Adjudicating familial claims is critical to determining family reunification cases, since countries that have such provisions in their immigration policies require proof of relatedness, whether it is biological or legal through formal adoption. With its ability to demonstrate familial ties, DNA testing appears to be an objective, reliable, and easy to use tool for determining family reunification cases.¹

We explore this relationship between technology, the meaning of family, and immigration with an investigation into the use of DNA testing for family reunification in immigration cases in Finland, Germany, and the United States—the first transatlantic analysis of such cases. We are particularly interested in the rationality behind the introduction of DNA testing for immigration purposes and its consequences for defining familial ties. Does DNA testing provide a definitive tool for adjudicating family reunification cases? What might such technological uses mean for the idea of belonging? How have biotechnologies become the tool through which questions about identity and inclusion or exclusion are not only answered, but asked in the first place?

To answer these and related questions, we investigate these countries’ guidelines on the use of DNA testing for demonstrating family ties and the administrative practice of evaluating family claims involving genetic analysis. Based on our analyses of archival records, government documents, and interviews with immigration stakeholders, we make three arguments. First, despite official declarations that state DNA testing is a voluntary option for families wishing to exercise their right to family reunification, we find

evidence that immigration officials regularly require it in cases involving what they consider to be questionable or unsubstantiated ties. Second, although officials and immigrant applicants ascribe authority to DNA tests in part because they attribute scientific validity to them, they do not rely on test results alone when making a final determination on the meaning of family. Applicants may question a challenge to the family narrative they firmly believe, and immigration officials may require further information in adjudicating family reunification cases. Quite succinctly, DNA testing is not always conclusive. Immigration officials, for example, may object to a biological finding revealed by DNA testing. Without challenging the scientific validity of the test, officials question what we term “social validity”—whether the interpretation of test results matches the social or political meanings of family in a given local context. As such, they may equivocate on the meaning of family and the rights of immigrants to unite and enter.

We argue that this equivocation around DNA testing illustrates a degree of tension regarding its use. Both applicants and state officials recognize that questions about who belongs to and what constitutes a real family, as well as which individuals nation-states should permit entry, cannot be answered by technology alone. The ways in which applicants make sense of test results may have consequences for how they maintain their familial relations. Officials charged with the duty of gatekeeping must contend with contradictions that may exist between the strict enforcement of policies, complexities of social life, and the solidity of DNA test results. While they do not challenge the scientific validity of DNA testing, immigration and other officials construct a workable solution, using DNA analyses as part of a larger collage of what represents a family. They use the results either to substantiate a preconceived social definition or to rebut such a conception.

Finally, we show that the use of DNA profiling illustrates how the test belongs to the politics of exclusion rather than a technology of belonging (M’charek, Schramm, and Skinner 2014a). This contrasts with celebratory pronouncements like those made by commercial genealogical testing sites, which suggest that DNA testing can help build ties between long-lost family members or ancestral homelands (Nelson 2016). It is also contrary to state officials’ claims that DNA testing is a mere option for applicants as a way to prove their genuine family relation. Instead, we show that it can be an additional obstacle for immigrant applicants wishing to make claims on the nation-state.

After discussing the theoretical framework and the data and methods, we provide an overview of the different family reunification policies and practices in Finland, Germany, and the United States. We then explore how DNA testing has been introduced into the administration of family unity programs as a way to verify familial claims and discuss our findings in light of biomedical innovations as technologies of belonging.

Theoretical Framework

The idea of establishing family ties on the basis of genetic links is part of a larger trend toward the use of biological knowledge in liberal democracies to determine a person's eligibility for certain benefits or rights. Scholars refer to this eliding of biological knowledge and rights as biological citizenship (Petryna 2002; Rose and Novas 2005) or genetic citizenship (Heath, Rapp, and Taussig 2004; Kerr 2003). Despite varying uses of the term, the conceptualizations share a number of important features. Most importantly, biological citizenship refers to the extension of rights, the emergence of new possibilities of participation, and the enhancement of choice based on shared biological traits.² Social, political, and economic rights are no longer simply matters of policy or a part of public discourse. They are instead embodied in a person whose biology can be analyzed through the use of new technologies. Thus, while a person may provide an incomplete or even wrong account of an event and make false claims, "the body does not lie" (Aas 2006). As such, DNA testing holds out the promise of biological citizenship through the evidentiary claim one can make about familial ties. However, test results may deny or be incapable of proving the affective ties of family while making all the more elusive the idea of belonging to a nation-state (Jasanoff 2005).

Claims about genes and nationhood require a new ordering or, at least, a reassessment of which account—the genetic or social—is the *real* one. As such, questions about the use of DNA testing in family reunification cases illustrate the tension between the supposed absolute nature of genetic tests versus the seemingly contingent nature of personal accounts. Seen through the lens of genetic analysis, personal narratives about our origins and our relatedness can come under suspicion and be declared less real than the results of a buccal swab test. This friction, however, does not lie simply with the fact that genetic tests sometimes betray our beliefs about our origins and familial or national ties. Rather, the discord exists, because in the case of family reunification, immigration stakeholders turn to biotechnology to provide answers to questions that are fundamentally social and political.

In essence, immigration stakeholders recognize different forms of validity in DNA testing, using the results in sometimes unexpected ways. To capture these different dimensions, we distinguish between two different types of validity. The first is scientific validity, which asks whether the DNA test consistently and reproducibly identifies the same alleles and measures the length of short tandem repeats appropriately. Scientific validity also raises the question of whether the test results do indeed tell us something about biological relations and can differentiate between those who are biologically related and those who are not. The second type—social validity—addresses the question of what kinds of meanings are attributed to a positive or negative test result or, in other words, how the technology is used in a specific social context. In evaluating DNA test results, applicants and immigration officials have to contend with the question of whether a negative test confirms a family relation does not exist or whether a positive test affirms the existence of family relations. In adjudicating claims, officials evaluate these results within a larger context of legal and cultural norms, social values, and attitudes toward certain technologies.

The use of DNA testing in family reunification is part of a long history of the politics of belonging—the practice of establishing which individuals or groups can make legitimate claims for inclusion into the nation-state. Nation and state-building policies throughout the nineteenth and twentieth centuries categorized and counted biologically defined races for the purpose of granting political or social rights (Loveman 2014; Nobles 2000) as well as for denying entry to undesirable immigrants (FitzGerald and Cook-Martín 2014). Today, efforts to identify the contours of a nation in biologically racial terms include the historical recounting of the nation's genetic origins. These accounts declare individuals or populations with a particular genetic profile as having a more rightful claim to a given land or region (Sykes 2001; Abu El-Haj 2012; Kohli-Laven 2012). DNA tests, or more precisely the stories we weave around them, help to delineate in racialized terms both the body politic and social identity of national belonging (Wailoo, Nelson, and Lee 2012; M'charek, Schramm, and Skinner 2014b; Roth 2016). This suggests that DNA testing, rather than being conclusive, has a complex and complicated social life, whose application and meaning are constructed at each iterative use (Kruse 2016; Nelson 2016). Immigration stakeholders involved in DNA testing for family reunification, particularly immigration officials and geneticists, emphasize that the technology is an option offered to applicants as a way to prove family relations in cases lacking other credible evidence. In these cases, it is indeed a technology of belonging. However, in practice, DNA testing is often used

as an obstacle in the immigration procedure; it becomes a tool to exclude people on the basis of supposed biological facts. Given the history of race and nation-building projects, the rationale and consequence of DNA testing may be racialized in both intent and outcomes.

Our investigation of DNA testing and family reunification in Finland, Germany, and the United States shows how the social and affective meanings of family do not map neatly onto genetic definitions, which are clearly and unequivocally embodied in the would-be immigrants. Instead, we must examine how social validity is attributed to DNA testing, because it is considered a socially acceptable and scientifically valid tool in family reunification cases. Immigration stakeholders' efforts to evaluate the social validity of DNA test results are in essence a form of "family ideation"—the conceptualization of family in idealized terms of race, gender, or class attributes (Lee 2013, 6). Thus, their assessments of test results are not merely an evaluation of scientific assertions but rather social and political claims about what kinds of bodies can make demands on the nation.

Data and Methods

The comparison between Finland, Germany, and the United States is particularly informative as these countries share many of the core principles of the right to family reunification but at the same time represent different immigration regimes. This enables us to explore how a biotechnology that is considered to be universal with regard to its scientific principles is implemented in a variety of national settings. It allows us to show how social validity—in addition to scientific validity—is attributed to DNA testing in immigration contexts. The approach therefore provides knowledge of how DNA information is used and mobilized in decision making with regard to family reunification, thus strengthening our understanding of the historical and institutional dynamics of immigration policy.

As liberal democracies, Finland, Germany, and the United States have steadily expanded the social definitions of family and citizenship rights. The United States has the longest history of family reunification while Germany began implementing such a policy in the 1970s. Despite previous eras of racist and exclusionary legislations, the United States and Germany have more recent histories of immigrant-friendly policies. Finland has a shorter history of receiving immigrants in large numbers and allowing families to unite, beginning in the 1990s. The courts in Germany and the United States have generally interpreted the law in favor of immigrants' rights to family unity (Joppke 1998). As such, each of these three states can

be labeled as having liberal immigrant regimes (Hollifield 1992; Joppke 1998). However, in the past four years, there has been a turn toward more exclusionary immigration policies. In Finland and Germany, this has followed the significant number of refugees from Syria and the Middle East that arrived in Europe in the second half of 2015. In the United States, the Trump administration has painted a bleak and dangerous picture of legal and unauthorized immigration as being bad for the US economy and culture.

Although all three countries share a common liberal democratic tradition, they also have important differences. Each country has a distinct immigration history. The current US immigration policy emphasizes family reunification with provisions for citizens and permanent residents and includes opportunities to sponsor nuclear and certain extended family members, although the Trump administration has proposed to replace it with a merit-based system. With a more recent history of immigration, Finland continues to have intense public debates about how to deal with immigrants. Nevertheless, because of its Nordic social democratic tradition, Finland officially has the most liberal immigration policy of the three countries with an extended understanding of what constitutes family. Germany's earlier history of exclusion and denial of citizenship, especially for Turkish immigrants who arrived in the 1970s, was replaced by a more welcoming and open attitude toward immigrants in the 1990s and, most recently, asylum seekers. However, it has very strict family reunification regulations with an emphasis on a nuclear family model that includes only married partners and their underage children.

While the United States operates separate policies and administrative practices for permanent residents and refugees (e.g., varying eligibility for sponsorship and quotas for different family members), this distinction is in effect nonexistent in Finland and Germany. Native citizens, permanent residents, and refugees alike have similar rights and obligations in the context of family reunification and must comply with the same regulations.³ Finally, all three countries are advanced nation-states that are prepared to use technology to address complicated political, social, and cultural questions about national belonging and family. Examining the use of DNA testing in family reunification in these three countries, therefore, allows us to see how biotechnology is invoked in diverse settings. To analyze how parental testing is used in the three countries, we researched archival records, reviewed family reunification cases, and examined extensive government documents, including legal statutes, draft laws, immigration-related agencies' guidelines and directives, parliamentary or legislative

debates, official meeting minutes of government hearings and public debates, government and expert committee reports, policy statements and protocols, nongovernmental organization materials, and media reports. We also conducted over three dozen interviews with different stakeholders involved in the process of family reunification, including immigration officials, lawmakers, applicants for family reunification, geneticists, lawyers specializing in immigration law, and representatives of nongovernmental organizations and immigrant advocacy groups. In all, we collected evidence from the United States, Germany, and Finland over a ten-year period.

Family Reunification Policies

Family reunification has been the most important form of legal immigration to liberal democracies such as the United States and the EU member states for several decades. The right to family reunification derives from the protection of the family as laid out in the Universal Declaration of Human Rights (United Nations General Assembly 1948; see also Jastram and Newland 2003), which defines “family” as the “natural and fundamental group unit of society.” This view of the importance of family is echoed in a number of international conventions, and it has played an integral role in many countries’ immigration policies. The United States reserves roughly 70 percent of visas for family reunification, which fuels nearly two-thirds of the total permanent legal immigration to the country. In the EU over the past decade, some 30 percent of all residence permits were issued for family reasons and accounted for more than 50 percent in seven member states, making family reunification by far the most important form of legal immigration to the EU.

In the United States, the Hart-Cellar Act of 1965 ushered in the contemporary family reunification provisions and ended the exclusionary national origins policy originally implemented in the 1920s. Although a semblance of family reunification existed in earlier policies, legislative efforts to provide family unity rights to immigrants were largely piecemeal until the 1965 legislation (Lee 2013). The current law provides the largest share of legal permanent resident visas to family reunification, followed by skilled immigrants and winners of a visa lottery intended to diversify immigration streams. Refugee and asylum immigration and family reunification are regulated by separate policies. There is no numerical cap for US citizens wishing to bring in their nonnative spouses, minor children, adopted orphans, and parents. The family preference categories are then ranked with flexible caps for (1) adult, unmarried children of US citizens, (2) spouses

and children of US permanent residents, (3) adult, married children of US citizens, and (4) siblings of US citizens over the age of twenty-one.

In the EU, the most important legal document regulating family reunification is the Council Directive 2003/86/EC, which was ratified in 2003. The directive aims to implement the right to family reunification as stated in the Charter of Fundamental Rights of the EU (Heinemann, Naue, and Tapaninen 2013). The directive not only contains legal information on the rights of the applicant and family but also provides a framework for administrative practice. Yet even this framework leaves considerable room for interpretation regarding the underlying concept of family, the right of minors to apply for family reunification, the age limits for minors and spouses, the status of marriage as a prerequisite for application, and the use of DNA analysis to verify biological family relationships. Generally, family reunification in Europe is based on a nuclear family model—spouses or same-sex partners and their minor children (Heinemann, Naue, and Tapaninen 2013; Wright and Larsen 2007). Only very few EU member states such as Finland allow for family reunification with extended family members. In Germany, 82,440 visas were granted for family reunification in 2015, but only 0.9 percent of these visas were issued to more extended family members (Grote 2017, 52).

DNA Testing as Standard Tool

In all three countries, applicants for family reunification have to prove their family status with legal documents, ideally certificates of marriage and birth. In Finland, immigration officials conduct interviews with the applicants to verify that a social–familial relationship exists. Since the 1990s, many European countries have responded to the growing numbers of applications by introducing efficient methods of identification such as fingerprinting, biometric passports, and age assessment. DNA testing to verify family ties can be placed in the context of these biometric technologies and complements conventional migration policy verification methods like passports and personal interviews (Torpey 2000). In the early 1990s, a number of host countries began to use DNA analysis systematically to resolve family reunification cases with incomplete or unsatisfactory information on family relationships (Taitz, Weekers, and Mosca 2002; Heinemann and Lemke 2013). Today, at least twenty-one countries around the world, including seventeen European countries, have incorporated parental testing to determine family reunification cases (Heinemann et al. 2015, 2). Unlike other biotechnological tools for identification such as fingerprinting, iris

scans, or biometric passports, DNA testing for family reunification was introduced explicitly not as a surveillance technology but as a voluntary option for applicants.

DNA analysis certainly offers some advantages in family reunification cases over traditional methods of identification such as blood testing (Davis 1994). It is faster, more reliable, and considerably cheaper than at its introduction. Supporters of DNA testing also believe it is an effective instrument for preventing child-trafficking and limiting fraudulent family reunification, although these two reasons are rarely mentioned in official documents or political debates. The official policy guidelines of the US Citizenship and Immigration Services (USCIS), for example, state that DNA testing cannot be required to “establish a claimed biological relationship” (Aytes 2008, 2). However, officials may suggest and consider DNA testing when “credible evidence is insufficient” to confirm the familial tie. Likewise, the German Federal Foreign Office, which is responsible for issuing visas for family reunification, stated in a written response to our inquiry that “DNA testing for family reunification is not a standard but only an exceptional procedure and [. . .] is only offered to the applicants if evidence relevant to the issue cannot otherwise be provided.” However, our research results indicate that such testing in cases of family reunification is not necessarily an ultima ratio or a voluntary option but a tool that is used regularly to verify a family relationship in immigration cases in the United States and the EU.

While the German Federal Foreign Office statement presents DNA testing for family reunification as a voluntary decision, several informants described it as a standard tool for the verification of a family relationship in immigration cases (UN High Commissioner for Refugees 2008, NGO officer 2, NGO officer 3). The head of the Aliens Department of a major city in Germany declared in a written statement that “while there is no obligation for applicants even from countries with an insufficient official documentation system to prove family relation by DNA evidence, parental testing is an appropriate and frequently used tool of verification” (Immigration officer 5). In addition, a senior UNHCR officer explained, “we observe an inflationary use of DNA analyses for family reunification for refugees from Africa and South-East Asia” (NGO officer 3). Similarly, a refugee advisor from a church information center in Germany stated that in 2010 alone she supervised more than twenty cases of Somali refugees who were asked to prove their family relations by a DNA test in the course of the family reunification procedure (NGO officer 4).

Although our investigation cannot definitively determine the likelihood that officials require DNA testing in cases involving non-white applicants, all the examples in our study involved individuals from countries with non-white, non-European populations. This is not surprising considering the fact that most immigrants to the host countries in our study are from Asia, Africa, Latin America, and the Middle East. Furthermore, officials from receiving countries have voiced doubts over the reliability of paper documents from many of the countries in these regions, highlighting evidence of fraud or the lack of records due to natural disasters and wars.

The official policies of the countries in our study see in DNA testing a tool that can establish a correct form of familial tie—that is, biological—when other forms of evidence cannot. They do not question the scientific validity of the technology. In turn, immigration officials, applicants, and their supporters rely on the irrefutable validity of DNA testing to prove their claims. Because DNA testing counts as an undisputed arbiter of questions on what a family is or who is eligible for immigration, its acceptance by all those involved may not necessarily draw concern. However, the use of DNA testing can sometimes raise as many questions about the meaning of family and national belonging as it answers for immigration gatekeepers and applicants. In the next two sections, we examine how DNA testing can validate as well as challenge what is expected to be real and true about the family.

DNA Testing as Validation Tool

For both nation-states and applicants, DNA testing can in theory streamline an immigration process that can be fraught with fraud for the former and a bureaucratic quagmire, involving delays and stress, for the latter. Particularly in situations in which paper records of family ties either do not exist or are unreliable, DNA testing can provide a clear option for both the government and applicants. Such logic operates smoothly in situations like the case of an Eritrean man in Germany without a passport or other documents who was granted asylum. Without paper records to prove his family connections, he voluntarily submitted to DNA testing to facilitate his application to be reunited with his family of four children and wife. The process, from application to final decision, took less than three months.

For nation-states implementing family reunification policies, such clarity and certainty can help guide the direction of existing policies. Thus, for example, on the basis of evidence immigration officials believed demonstrated fraud, the US State Department suspended a humanitarian

program designed to reunite refugees with their family members in the United States in 2008. As part of the US Refugees Admissions Program, the United States provides individual refugees with eligible nationalities to apply for family reunification with certain allowable family sponsors in the United States under the Priority 3 (P-3) program. Most of the applicants, about 95 percent, were African, particularly Somali, Ethiopian, and Liberian. Earlier in 2008, the government conducted a pilot program to test the DNA of around 500 refugee applicants in Kenya who were mostly Somali and Ethiopian to confirm familial ties and later expanded testing to approximately 3,000 applicants throughout Africa. DNA testing showed biological family ties in only 20 percent of cases, and in the remaining cases, there was at least one genetically unverified relationship or no testing occurred. Government officials concluded there were high levels of fraud and halted or suspended the program across the continent. In select countries where the program continued, applicants in all P-3 cases approved by USCIS had to undergo DNA testing of all claimed biological relationships (Bureau of Population, Refugees, and Migration 2008; Holland 2011).

These examples highlight what scholars in science and technology studies have long argued with regard to the use of technology. People turn to technological innovations to affirm what they believe to be true. When DNA testing validates the belief that a biological family tie exists or that suspicion of fraud was warranted, neither the use of technology to answer the question of “who is a family member” nor the question itself appears problematic. They confirm scientific validity. However, although technology in general and DNA testing in particular may answer one question (“Is there a genetic tie between two people?”), it raises substantially more questions regarding the meaning of family and whether such constructs should form the basis for allowing immigrants to enter.

DNA Testing as Challenge to Personal Narratives

One reason DNA testing may not be conclusive in determining the meaning of family in reunification cases is that test results may dispute the personal narratives that immigrants and their families tell themselves about how they are related. They may also challenge ideas about what family means for immigration officials. The seemingly unproblematic and helpful features of DNA testing in the German case above prompt many applicants to employ the method. Immigrants’ attorneys may also advise testing, especially when they expect it to confirm what everyone believes to be the family relationship. However, DNA testing can call into question the meaning of family

for the members themselves. Its use in a stay of removal immigration case involving an unauthorized immigrant from Mexico in the United States highlights this point. A man sought a stay of removal, arguing he had a young US-born daughter who was dependent on him and would be harmed by his departure from the country. Although the man and the girl's mother never married, he was an active father in the girl's life. She stayed with him on weekends and knew his parents as her grandparents. When the man sought to demonstrate his claims, his attorney encouraged him to take a DNA test to establish paternity. Neither he nor his attorney thought twice about this decision. Unfortunately, DNA test results showed that the man was not the girl's biological father. Without biological proof of familial ties, the man lost his appeal to remain in the country. Along with his departure from the United States, the man's relationship with the girl ended. When questioned why she asked her client to take a DNA test, the attorney explained that the option seemed "easy and obvious." Neither she nor the man ever suspected DNA testing would negate what everyone believed to be true.

Even in cases in which DNA testing appears to have provided clear, definitive proof of true or fraudulent claims of biological relations, test results may raise additional questions. For example, a more critical look at the P-3 Program example above demonstrates the complexities surrounding the meaning and practice of family despite the supposed scientific validity of the results (Dove 2013). After DNA testing of some 3,000 applicants in Africa, US government officials showed evidence of biological ties in fewer than 20 percent of cases or family units. However, this did not mean that the remaining 80 percent of cases involved fraud or that there were no familial ties. Many applicants did not take the DNA test while others were unable to prove their adoptive relations. Still other applicants faced apparent contradictions in their claims of familial ties. Rather than streamlining or facilitating family reunification cases in which documentary evidence may have been difficult to gather because of the very conditions that created their refugee status, many applicants faced the unintended consequences of having participated in DNA testing. Test results made public secrets regarding infidelity or rape or surprised applicants who learned that their children who had been previously separated by war or violence were not biologically related (Holland 2011, 1646).

Unexpected results can also surprise immigration officials, especially when they order a DNA test expecting to see evidence of fraud. In a case in Germany, a Burmese refugee, who was granted a residence permit in Germany in 2002, applied for family reunification to be reunited with his

wife and their two sons who were still in Burma at the time. They had not immediately accompanied the refugee on his trip to Germany, because they were afraid of the long, dangerous, and exhausting journey. The German immigration authorities, namely the German embassy in Burma and the Aliens Department in a German town, asked the applicant to provide evidence of the family relationship before deciding on his application. In response, the applicant submitted certificates of marriage and birth, family photos, and receipts for regular money transfers from Germany to his family in Burma. Immigration authorities, however, questioned the authenticity of the certificates and deemed the other evidence inappropriate and insufficient. The applicant contested the decision in a German court. Eventually, the German immigration authority agreed to let the applicant's family enter the country but only on condition that the family provide a DNA parentage test upon arrival.

The family had to pay 800 euros for the test, a huge sum for refugees with no substantial financial resources. The results showed the man to be the biological father of both sons, but the mother was biologically related only to the younger child. In other words, the DNA test provided evidence that all persons involved were somehow biologically related and fulfilled the legal definition of a family but not in the way one might have expected. In the end, all family members were granted residence permits in Germany. However, family reunification came at a price; DNA testing revealed family relations that not all family members previously knew. Test results showed that the two children were not full biological siblings but instead half-brothers. The man's first wife died when the older son was just three weeks old. He eventually married the nanny he hired to help care for his infant son. She later gave birth to the younger son, and the two parents raised both boys without disclosing the details of the older son's birth mother. DNA test results contradicted the narrative of family the man and his wife had declared and lived for years. While all of these examples illustrate the point that immigration officials may use DNA testing to facilitate their decision making, the varying experiences of applicants and officials highlight the fact that DNA test results do not necessarily lay to rest the nature or meaning of familial ties.

Reconciling the Biological and Social Family

The increased adoption of DNA testing and immigration officials' desires to rely on technology are understandable. The definitive features of DNA testing appear to offer a clear and workable solution to problems such as

forged documents and fraudulent familial claims. DNA testing is “simple.” However, as we have demonstrated thus far, test results may answer one question while raising many others for both applicants and immigration officials. Even when testing offers clear results in identifying biological relations that meet eligibility for family reunification, such rendering of family may conflict with immigration officials’ or national ideas of what a family should look like. As DNA testing becomes an increasingly more important tool for verifying familial claims, immigration officials and applicants must find ways to reconcile the biological and social meanings of family, that is, the scientific and social validity of test results.

DNA testing can prove much more than biological parent–child relations. It is capable of demonstrating family relations between several generations and can also provide information on more distant family members.⁴ The tests can be used, for example, to prove an uncle–nephew or aunt–nephew relationship or to determine whether two persons are full or half-siblings. Sometimes DNA testing provides evidence of a biological relationship that meets the legal definition of family eligible for reunification and also a social relationship that immigration officials and the wider public may find objectionable, such as polygamy.

This was the case with a Somali man who arrived in Germany as a refugee and was granted asylum. He eventually applied for family reunification and sought to sponsor two women he had married in Somalia. However, because polygamy is illegal in Germany, the man’s second wife was ineligible for entry as a sponsored spouse. The man affirmed his biological relationship to the nine children he had fathered with the two women through DNA testing and sponsored their immigration. The German government allowed him to bring all nine of his biological children to Germany. The children’s mothers subsequently applied to be reunited with their biological children. In the end, all the individuals who constituted the family in Somalia were allowed to enter Germany. Given their polygamous relationship and German laws against polygamy, their reunification would have been impossible without the DNA test.

One way to address the unintended consequence of admitting immigrants whose social arrangement of family is possibly objectionable, even as their biological claim is verified, is to require confirmation of a family through nongenetic means. Officials may insist DNA analysis provides only one piece of evidence in family reunification cases, which may be necessary but not in itself sufficient. Expressing this point, the Finnish Immigration Service stated in a press release in 2008, “A purely biological relationship is not, however, sufficient for a positive decision on a residence permit

without a background of a genuine, permanent family life.” As Tapaninen and Helén (2015, 48) explain regarding immigration procedures in Finland, “in some cases, DNA analysis does not necessarily provide enough support for a favorable decision.” This makes clear that family consists of more than just a biological relationship. In a similar vein, the European Court of Human Rights (2012a, 2012b) argued in two judgments that parenthood is not defined in terms of biological relatedness but rather as a social relation. Therefore, in the Finnish context at least, the parental test alone is never sufficient for determining family reunification, because the test is not capable of assessing the quality of family life.

This perspective has two implications for the concept of family. First, it imposes a limit on the use of DNA analysis. A qualitative assessment of the family is required in every case. Even if the DNA test itself is negative, the decision on family reunification can still be positive if there is an existing family life. Second, it is possible for a biological family not to be granted family reunification, because further investigation may show that there is no genuine family life. Given the circumstances under which individuals apply for international protection and family reunification, it may be extremely difficult to maintain a normal family life or to provide evidentiary proof of it. Thus, while the combination of social and biological assessments of family in the Finnish context may appear more humane, it can also be understood as a restriction on or an obstacle to family reunification.

These examples illustrate the point that DNA testing is suitable for evaluating claims of biological relationship and providing an answer to the question “Is this a biological family?” However, applicants may counter the answer with their own narrative of family. Likewise, immigration officials and policy makers may question the legitimacy of the answer. All these challenges highlight the fact that DNA testing is unable to address the cultural, social, and political questions of “What is a family” and “Who has the right to enter and join the nation?” In order to answer these questions, immigration stakeholders grapple with the social validity of DNA testing of family. Biotechnological answers are unlikely to yield conclusive answers to such complex and potentially fraught questions.

Conclusion

The growing popularity of DNA testing—from ancestral genealogy to its widespread use in forensic and medical science—illustrates not only the acceptance of its scientific merits but also the social life DNA has taken on, as Nelson (2016) argues (see also Kruse 2016). Laypeople, expert scientists,

and government officials use genetics in multifaceted ways, seeking answers to a wide variety of questions. Many of these questions are fundamentally about how we are connected socially rather than biologically.

We have shown how DNA technology is used to ask and answer questions about who constitutes a family and whether such individuals may settle in a particular state. In the United States, Finland, and Germany, DNA testing is not a condition for demonstrating proof of familial ties. Nonetheless, immigration stakeholders—from applicants to immigration officials—often turn to genetics, partly because they believe in the technology's scientific validity. The test promises seemingly scientifically unshakable, objective results about who belongs to the family and who does not relatively quickly and inexpensively. However, in many cases, DNA test results are not conclusive; immigration officials may equivocate on a family reunification case despite test results that demand a particular conclusion. The individuals have to fit the narrative of a family—that is, the social definition. In Finland, for example, we saw that the state demands applicants for family reunification demonstrate a quality family life. Such vacillation underlines our argument that DNA test results have to be understood within a particular political and social context. We call this evaluation of test results and social interpretation within a local milieu social validity.

As we have shown, social validity extends beyond scientifically sound procedures. Different stakeholders attribute or challenge the validity of the test, that is, its usefulness, appropriateness, and so on, in a specific historical and socio-legal context. The use of DNA testing and, as we argue, the use of any biotechnology for family reunification can only be adequately understood and critically evaluated by empirically analyzing the specific social setting in which the test is used. Social validity highlights the fact that DNA testing does not come closer to defining what a true family is. The concept of social validity helps us to understand the process by which actors interpret and use test results to generate a particular kind of truth.

Our analysis of the use of DNA testing for immigration purposes also makes an important contribution to understanding genetic testing as a technology of belonging (M'charek, Schramm, and Skinner 2014a). Immigration stakeholders—including applicants, their advocates, immigration officials, and state policy makers—turn to genetics for objective answers on who belongs to a nation-state or who is allowed to enter a country. However, the questions they pose are less about biology and more about the politics of inclusion. Immigration officials are tempted to rely on the definitive features of DNA testing but sometimes find themselves in untenable situations. They struggle to answer questions of how to verify familial

claims and to determine who should enter. In making their decisions, they engage in family ideation, articulating idealized features of family that are often gendered and racialized (Lee 2013). Our research is unable to definitively determine the likelihood that DNA testing is required in family reunification cases involving white versus non-white applicants. However, we recognize that given the higher rates of immigration from countries with non-white, non-European populations to the United States, Finland, and Germany, immigrant settlement through family reunification has already begun changing the ethnoracial character of host countries, especially the United States. Immigration gatekeepers may question family reunification as an effort to limit permanent settlement of new immigrants who can alter the national identity. Thus, state officials' efforts are part of a long history of identifying the contours of the nation through racially exclusionary immigration laws and citizenship projects that extend political, economic, and social rights to individuals and members of groups deemed worthy or desirable.

Therefore, the use of DNA testing in family reunification cases is another illustration of biotechnological deployment in biological citizenship claims. Theoretically, individuals can make claims on the state, seek membership into the nation, and gain political, economic, and social rights based on biological traits. DNA testing in family reunification cases appears to be a clear and perfect example of how biological citizenship can be expansive. However, this is only part of the story. The way biological information is used in family reunification cases also points to exclusionary politics and a restrictive side of biological citizenship. Our analysis shows that it is important to investigate both aspects to fully understand the complex dimensions of DNA testing as a technology of belonging.

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Notes

1. Today, DNA testing is mostly associated with criminal procedures. However, the first use of "DNA fingerprinting" relates to an immigration case in 1985. After British geneticist Alec Jeffreys and his colleagues published their discovery in *Nature* (Jeffreys, Wilson, and Thein 1985), and the popular press reported their findings, a team of lawyers contacted Jeffreys. They were representing a Ghanaian boy born in the United Kingdom (UK) to a British mother. He had lived in Ghana with his father for some time and, upon his return to the UK, immigration officials questioned whether he was biologically related to a British mother (Jeffreys, Brookfield, and Semeonoff 1985, 818). Jeffreys took blood samples from the boy, the alleged mother, and three siblings. The DNA analysis showed that the boy was indeed the biological son of the mother and a full sibling of her other children. On the basis of the DNA evidence, the UK Home Office acknowledged the existence of a familial relationship, and the boy was allowed to stay in the country.
2. For an overview, see Heinemann (2015).
3. There are only minor differences with regard to requirements for basic language skills or a basic income. For example, in Germany, refugees do not need to provide a living wage and living space if they apply for family reunification within three months after they have been officially granted asylum by the German Federal Office for Migration and Refugees.
4. While DNA profiling is a very precise way of determining biological relatedness, the test also has some limits. For example, mutations may occur that lead to an exclusion of maternity or paternity even though a biological relation exists. The statistical accuracy can also be an issue, particularly when the persons to be tested are attributed to a population where geneticists do not have a good reference database (Dawid, Mortera, and Pascali 2001; Karlsson et al. 2007; Mansuet-Lupo et al. 2009).

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