



Genetic syncretism: Latin American forensics and global indigenous organizing

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Abstract In the 1970s, Latin America became a global laboratory for military interventions, the cultivation of terror, and ideological and economic transformation. In response, family groups and young scientists forged a new activist forensics focused on human rights, victim-centered justice, and state accountability, inaugurating new forms of forensic practice. We examine how this new form of forensic practice centered in forensic genetics has led to a critical engagement with Indigeneity both within and outside the lab. Drawing on ethnographic fieldwork with human rights activists and forensic scientists in Argentina, Guatemala and Mexico, this paper examines the relationship between forensic genetics, Indigenous organizing, and human rights practice. We offer the concept of ‘genetic syncretism’ to attend to spaces where multiple and competing beliefs about genetics, justice, and Indigenous identity are worked out through (1) coming together in care, (2) incorporation, and (3) ritual. Helping to unpack the uneasy and incomplete alliance of Indigenous interests and forensic genetic practice in Latin American, genetic syncretism offers a theoretical lens that is attentive to how differentials of power embedded in colonial logics and scientific practice are brokered through the coming together of seemingly incompatible beliefs and practices.

Keywords Indigeneity · Genetics · Race · Social movements · Forensic science · Latin America

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To be human is to be a syncretist.
 - J. H Kamstra (quoted in Pye 1971, p. 23)

In the last half of the twentieth century in Latin America, dictatorial leaders and military juntas waged brutal transnational counter-insurgency campaigns to eradicate the perceived threat of communism on the continent. Repressive governments, under the guise of ‘civil wars’ in Central America and South America and the ‘dirty wars’ in Mexico and the Southern cone, disappeared hundreds of thousands of men, women, and children; entire families were massacred. Latin America became a global laboratory for military interventions, the cultivation of terror, and ideological and economic transformation with military governments engaging in US-supported counter-insurgency campaigns against Indigenous and working-class communities. In response, family members and young scientists forged a new activist forensics focused on human rights, victim-centered justice, and state accountability, inaugurating new forms of systematic data collection about Latin American bodies in the name of justice—especially justice for increasingly self-identified Indigenous peoples.

Drawing on ethnographic fieldwork with human rights activists and forensic scientists in three Latin American contexts, this paper examines the relationship between forensic genetics, Indigenous organizing, and human rights practice in Latin America. We offer the concept of ‘genetic syncretism’ as a mode of attending to the blending and hybridization of seemingly incompatible aims, epistemes, and ontologies within genetic practice, especially within human rights genetics in Guatemala, Argentina, and Mexico. Scholars of Latin American religious practice have developed the concept of syncretism (Broda 2003) to document and think through the incomplete, uneven, and incoherent blending of European Catholicism and Indigenous worldviews. They show syncretism at work in cultural institutions like the *Virgen de Guadalupe* in Mexico (Beatty 2006; Köhler 2013) or the folk saints and *cofradías* in highland Mayan communities (Falla 2001), where Indigenous histories, contested and competing power structures, resistances, and dominations come together unevenly and incoherently. Building on this analytic tradition, genetic syncretism offers a theoretical lens that is attentive to how differentials of power embedded in colonial logics and scientific practice are brokered through the coming together of seemingly incompatible beliefs and practices within genetic research. Genetic syncretism draws our attention to moments of mixing where both ‘cultural’ and ‘scientific’ ideas of alterity are negotiated and held stable for a time. Through a genealogy of the concept of genetic syncretism, we suggest three emergent spaces for analytic attention within genetics: (1) coming together in care, (2) incorporation, and (3) ritual practices.

We analyze moments of genetic syncretism that occur both within and outside the forensic lab drawn from our 30 months of non-continuous field research with forensic scientists and research activists in the region between 2005 and 2021. We deliberately focus on spaces where multiple and competing beliefs about genetics, justice, and Indigenous identity are worked out. Thinking about contemporary genetics as syncretic, we can attend to how differing ideas about the body, Indigenous identity, violence, justice, rights, race and racism, and national belonging come together



in shared projects within the space of forensic genetics while also recognizing the incongruities, challenges, slippages, and spaces of domination. We suggest that by attending to care, incorporation and ritual, the lens of genetic syncretism allows for a non-reductionist analysis that exceeds both scientific discourses of inclusion and scholarly critiques of genetic essentialism.

“Indian-Indian Giving”: genetics and/as global Indigenous organizing

In June 2011, one of us rode from Guatemala City to Antigua with Fredy Peccerelli and Clyde Snow, two forensic anthropologists who have played an outsized role in driving human rights forensic identification in Latin America. We were going to a public outreach event of the *Fundación de Antropología Forense de Guatemala* (FAFG) “hidden in plain sight” project. The initiative focused on a new methodology for finding the bodies of forcibly disappeared individuals by excavating the graves of those buried in cities under X. X. (identity unknown), of which there was an unexplained increase during the 1980s, the most repressive period of Guatemala’s civil war and Mayan genocide (Snow et al. 2008). As we drove past the slopes of a volcano, Clyde Snow pointed out a group wearing traditional Mayan clothes. They carried religious artifacts—corn, large leaves, offerings of food, and ceremonial fires—and began their ascent in a single file line. Clyde Snow noticed the similarity between this Mayan ceremonial practice and the Indigenous ceremonies that he was familiar with from his native Oklahoma—and he asked about the ceremony: was the leaf they were carrying tobacco, like that used ceremonially in the United States? He mused about the possibility of bringing a Choctaw or Cherokee delegation down to Guatemala on a humanitarian mission.

Fredy Peccerelli and Clyde Snow began to imagine the visit. They could invite U.S. tribal leaders on a trip to Guatemala, where they could participate in shared ceremonies, visit the villages where Indigenous Mayans had been massacred, and, finally, tour the new genetics lab to see the work the FAFG was doing with Mayan survivors. Clyde explained how this might be a transformative form of Indigenous solidarity now that many tribes in the United States had made large sums through casinos, putting them in a position to donate. He reasoned that U.S. Indigenous groups would care about Indigenous Guatemalans, especially once they witnessed the shared elements of their ritual practice. Could this be a sustainable strategy of South-South support? He made a joke calling this “Indian-Indian giving,” offering a tongue-in-cheek subversion of American racist tropes about native peoples. The experience of genocide, like ritual, spanned the continent, Snow argued; a well-designed visit could make these delegations see how the trail of tears and the Mayan genocide were part of the same history. He reasoned that supporting the work of the FAFG genetics lab in Guatemala could be one way to promote global Indigenous sovereignty and resilience.

Fredy Peccerelli and Clyde Snow were central players in this emergent human rights forensics (Smith 2017). The Forensics they helped to develop was consciously deployed as a tool for human rights, one that could respond to the state-led counter-insurgency-style warfare and its violence, economic dispossession, and destruction



of civil society (Grandin 2007; Esparza et al. 2009; Joseph et al. 2007). The use of paramilitary forces and clandestine burial marked the violence of this period, inventing an enduring technique of terror and a new category of person: *el desaparecido*. In Guatemala, in the 1980s the government engaged in a scorched earth policy of genocide in the Mayan highlands (Menchú and Burgos-Debray 1984). Paramilitary forces also disappeared activists in urban spaces (Cullather 2006; Sanford 2003) using methods learned directly from experts in the region -particularly Argentina- to decimate urban resistance. In the aftermath of disappearance and genocide, protesting family members and young scientists formed a new alliance, and forensic anthropology and human genetics were remade as tools for human rights (Doretti and Snow 2003; Fondebrider 2015; Olarte-Sierra and Pérez-Bustos 2020; Rosenblatt 2010; Smith 2016). Linking objectivity, rigorous methods, and technological determinism with a politics of human dignity and rights, Latin American scientists and activists emerged as world experts in a forensics centered on identifying, burying, and mourning the disappeared (Fondebrider 2002; Doretti and Snow 2003).

Fredy Peccerelli is a founding member and the leader of the *Fundación de Antropología Forense de Guatemala* (FAFG), a multidisciplinary team of geneticists, anthropologists, and forensic scientists that focuses on working with communities in Guatemala to identify victims of genocide and government repression. Until his death in 2014, Clyde Snow was one of the most important forensic anthropologists in the world. His work both in the U.S. and in Latin America was central to the professionalization and diffusion of forensic anthropology as a scientific practice. His collaborations with student anthropologists in the 1970s and 80s created a new model for science-based justice, as he taught young men and women to use their anthropological training to locate mass graves, document the violence inflicted on the dead, and identify remains to hold governments accountable for crimes against humanity (Green 1986; Levin 2015; Rosenblatt 2015). Part mentor, part friend, part strategist, Snow had a close relationship with Peccerelli. He often visited to help the *Fundación* find additional sources of support for its new and expensive state-of-the-art forensics lab. Snow prioritized his work to establish funding streams for the lab, arguing for the need to have a genetics lab in Guatemala, rather than adopting an out-sourcing model in which local activists would gather the samples and large centralized labs in the Global North would analyze the data. It mattered that the lab was in Guatemala, run by Guatemalans, and could provide training for a new generation of forensic experts in and of the Global South. This attention to capacity building in Latin America has been central to the FAFG's mission and part of the ongoing legacy of Snow's early training of local teams of experts.

Indigenous ceremonies have been prominent within the work of the *Fundación* in Guatemala. From its founding, the FAFG espoused a holistic approach to forensics and human rights, developing a four-field approach to addressing state violence with archeologists, linguistic, cultural, and biological anthropologists working alongside Mayan communities to document the genocide. In addition to their main office in Guatemala City, they maintained regional offices in the highlands staffed with members of the Mayan community. The Foundation's integration of language and culture into its forensic practice centered their relationship to Mayan communities, where people articulated their desires for identification, burial, and justice in both local



community logics and those of the transnational justice community. By staffing its investigation department with cultural anthropologists and employing Mayan translators and advocates, the FAFG foregrounded connection and community, making forensic work central to Guatemala's historic, albeit unjustly brief, victory in prosecuting genocide (Stuesse et al. 2013). The head of the cultural anthropology group explained this focus to one of us, emphasizing that the work of forensics had little value independent of the needs of the Mayan communities it served. She understood her team's work as not only recording testimonies or trying to identify massacre sites but also, most importantly, keeping the interests of the Mayan communities they served at the center of forensic identification. Local rituals always accompanied the work of excavation and reinterment, ensuring that both the community and the dead were cared for.

Despite this visible incorporation of Indigenous groups in its mission and outreach, most employees and scientific personnel at FAFG were urban, well-educated Guatemalans who explicitly identified as European or mestizo, tracing their roots back to prominent Spanish families. During six months of ethnographic fieldwork in the genetics lab in 2010 and 2013, talk of genetics intertwined with talk of Indigeneity in several ways. First, the group was careful to justify their methods, particularly their choices about how to validate genetic matches. This is a statistical process that has traditionally required the use of a reference database that ideally should reflect the population of the individual you are trying to identify. While there is an ongoing debate about the need and practicality of such databases (Oldt and Kanthaswamy 2020), forensic scientists in Latin America usually use reference databases developed in the U.S. to determine allelic frequencies and the statistics supporting matches. This choice created some concerns for the lab because their work was focused on ethnic Mayans, a culturally (and biologically) marked group within the country. However, they explained their decision by showing that Guatemalan mestizo profiles were statistically undifferentiated from the Hispanic forensic DNA reference population developed and used in U.S. criminal contexts (Martínez-Espin et al. 2006), thereby validating their protocol.

The group, however, remained committed to eventually creating its own reference database, one they thought might be more representative by databasing the collected samples from the Mayan population they served. They later published the results of the databanking as part of a methodological paper on using analysis of kinship relationships for large-scale human identification in the context of mass genocide (García et al. 2009). Most recently, the database was used to collaborate with a Mexican geneticist to use forensic genetic markers (STRs) to make claims about the genetic differentiation of Mayan populations (Aguilar-Velázquez et al. 2021).

While the lab and its samples emerged as a resource for population genetics and forensic genetics more broadly, the day-to-day work of all the lab members was focused on the identification of victims of massacres and disappearances. They routinely welcomed Mayan community members to the lab to witness the group at work, to visit the evidence room where remains were stored while the analysis took place, and to take DNA samples to help identify the victims of massacres and disappearances. In the work of the FAFG, genetic syncretism highlights the multiple ways that Indigenous Mayans are incorporated into forensic genetics, as partners,



beneficiaries, unique genetic populations, and generic Hispanic samples. These are incongruous and yet make up a coherent whole of forensic practice that includes diverse ideas about Indigeneity and its relationship to both the practice and aims of justice.

Identification by means of Indigeneity in Argentina

The Mexicans came from the Indians, the Brazilians came from the jungle, but we Argentines came from boats, and they were boats that came from Europe.

Alberto Fernández, President of Argentina, June 2021

On a first visit to Argentina in 2006, one of us met with a geneticist working with local forensic teams to use forensic genetic analysis to identify N.N. (unidentified individuals) bodies excavated from a large public cemetery in Córdoba. Unlike Guatemala, Argentina saw few large-scale massacres like those perpetrated in the Mayan highlands: instead individuals were taken, imprisoned and tortured in clandestine detention centers, and then killed in small groups, their bodies discovered littered across the landscape far from the places they had disappeared. As a result, the *Equipo Argentino de Antropología Forense* (EAAF) believed that one successful way to find the disappeared was to look at excess deaths and the burial of unidentified people. However, the practice of terror through disappearance, detention, and dispersed murder meant that victims were often discovered with no contextual clues like the clothes they disappeared in. Remains were purposely left in places where their families could not be easily called on to identify them. Genetic analysis, with its ability to estimate kinship, became a crucial early tool in Argentina to connect these N.N. bodies with searching families. The EAAF reproduced this same protocol in Guatemala in the “hidden in plain sight project” discussed earlier. In Argentina the geneticist on the project ran a lab in Córdoba which primarily focused on paternity testing. During a conversation with one of us, he explained that he had begun to work with the EAAF because of the intellectual challenge posed by attempting DNA extraction from bodies buried for years in poor conditions. His laboratory did pioneering work in extraction and purification of DNA from these samples while the EAAF worked with documents, archives, and historical analysis to try to piece together records of burials with known disappearances, survivor testimony, and the memories of families (Corach et al. 1997; Fondevila et al. 2003, p.). Although extraction from degraded samples is more routine now (Iyavoo et al. 2013; Ye et al. 2004), there were few established protocols at the time. Getting good results required what he understood as meaningful scientific work.

At a first meeting, when one of us explained an interest in the social and ethical aspects of genetics and human rights in Argentina, the geneticist immediately latched on to the ethics concern and explained how he had dealt with the ethical challenges posed by ‘incidental’ findings (Parker et al. 2013), that is, information uncovered in the course of analysis and investigation that is not directly pertinent to the questions in the case. He explained that his lab had encountered the routine concerns of a potential mismatch between genetic paternity and social paternity that is



a genetic analysis that revealed that a man who believed himself to be the biological father of his missing son was not genetically related to a body that otherwise fit the rest of the searching kin. He felt it was his duty to keep the confidences of the dead and obscure any findings of this kind.

Paternity seemed clear cut; it was the other cases of what he described as ‘incidental’ findings that remained far less obvious to him. In hushed tones, he said that in the course of identification, he had discovered that a significant number of the victims and families were not ‘European.’ Pulling out his computer, he showed me a program used to calculate the statistics required to make a match. On multiple occasions, he had been able to make a match only after altering the reference population used for the statistical analysis of the kinship match. When he used the European population database, the calculations looked promising but did not cross the statistical threshold. However, when the same likelihood ratios for a kinship match were calculated with an admixed reference population including Indigenous and black samples, the match reached an appropriate level of statistical confidence. He pointed towards the difference, referring to a set of match reports. In contrast to how talk of race or population in forensic genetics has been shut down in the criminal context through the standard use of over 20 STR markers for high statistical confidence (Oldt and Kanthaswamy 2020), in forensic contexts where bodies have been buried for extended time periods in acidic soil, DNA was often degraded and only extracted in small quantities. This often meant working with an incomplete profile, elevating the importance of statistical inference in identifications.

It hadn’t even occurred to the geneticist to use a non-European reference population in his work until he began to meet families. Córdoba, he said, was different from Buenos Aires. Córdoba had been an important colonial center of power with documented histories of Indigenous extermination and slavery (Edwards 2020; Escolar 2011). What should he tell families about these ethnic attributions? How would they feel to know they weren’t European? In one sense, he believed that this reference database error was more likely related to national assumptions of European whiteness than to ignorance. If he had asked the families, would they have recognized themselves in the admixed population? Might they experience shame or be upset with his findings? Ultimately, the geneticist did not disclose to families his use of reference databases that incorporated Indigenous and black samples or what the results had led him to conclude about the families’ ethnic origins. Like misattributed paternity, Indigeneity and blackness remained incidental, something to be quietly filed away and whispered about.

Medical and population geneticists who, like the geneticist working with the EAAF, realized that the national narrative could not capture the diversity of samples they saw in the lab (Marignac et al. 2004; Marino et al. 2006; Sala et al. 1999), drew on these ‘incidental’ findings to question the ethnic composition of the country. The results of the first genetic map of Argentina, which were widely publicized in print and radio news, declared that genetics had “unearthed” a buried diversity (Heguy 2005) and that 56% of Argentines had Indigenous people in their lineages. Since these early studies on genetic diversity, forensic anthropology has become less prominent in this work, with important research programs emerging from biological



anthropology using AIMS and SNPs to characterize the genetic diversity of the Argentinian population (Catelli et al. 2011; Muzzio et al. 2018).

For Argentina's working in forensics, the 2000s marked an important change in how they conceived of and described Indigeneity and admixture. Sala et al., who published the first set of genetic markers for Argentine populations (micro-satellites and Y-STR's) in 1999, began their paper saying, "The population of Argentina is mostly composed of people of European ancestry. Aboriginal communities are at present very reduced in number and restricted to small geographically isolated patches" (1999, p. 1733). They did, however, note that they had found the Y-STR sites (related to paternal lineages) to show significant discriminatory power, especially between the European and Indigenous groups they studied. Another study published in 2008 by several of the same authors begins, "The present population of central Argentina (Córdoba) is the result of a complex amalgamation of different cultures and populations with different genetic ancestries" (Salas et al. 2008, p. 662). Unlike the paper in 1999, this paper includes a thorough history of Argentina, including a discussion of Indigenous groups and their erasure, and the important economic role of slavery in founding the region. The focus of this paper is no longer the relevance of these findings for forensics or biomedicine, but instead, the authors place their results firmly in the realm of population genetics as a means of telling (reimagined) histories of the nation (Wade 2007).

One of us attended a community center event in Buenos Aires in 2006, which promised to introduce workshop participants to Indigenous histories. Taking advantage of the possibilities opened up by "genetic history" (De Chadarevian 2010), the event began with the Indigenous leaders who were teaching the group citing the recent news media accounts of a genetic study at the Universidad de Buenos Aires that showed that over half of Argentines have some Indigenous ancestors. Many of the mostly young and left-wing workshop participants were interested in learning more about their own possible Indigenous histories, and the workshop offered a buffet of approaches, including a brief overview of different Indigenous groups and a discussion of museums and archives where community members could learn more about this history and the ongoing challenges of land loss and dispossession of recognized *grupos indígenas*. Anthropologists working on these genetics projects have written about people's interest in participating in genetic studies to trace these Indigenous and Afro-Argentine histories in their own genes, with young people in particular drawn to these forms of re-identification (Di Fabio Rocca et al. 2018).

The rise of human rights forensics in Argentina and Latin America coincided with a contemporaneous global shift in organizing around the category of Indigenous peoples. The 1990s were pivotal in the emergence of global Indigeneity as something separate from race or ethnicity, subject to different rights and modes of redress (Niezen 2003). In the introduction to an edited collection on contemporary forms of Indigenous organizing (de la Cadena and Starn 2007), the authors point to the prominent role of Indigenous organizers in the 1990s, including Rigoberta Menchu, a Mayan activist whose *testimonio* about the Guatemalan genocide was central to ending the Guatemalan violence. She was awarded the Nobel Peace Prize in 1992, and the following year the U.N. declared 1993 the International Year of the World's Indigenous People. Earlier revolutionary movements (AIM, Marxist Indigenous



movements, etc.) were transmuted into an emergent global identity focused on Indigeneity (Graham and Penny 2014; Merlan 2009), which some have critiqued as the domestication of radical potential within the logic of neoliberal multiculturalism (Hale 2006). Others have challenged the easy association between indigeneity and alterity, and scholarly focus on the practices, objects and discourses where difference is more visible, as a method that ignores other equally important social phenomena where Indigenous alterity is less evident (Caballero and Acevedo-Rodrigo 2018). Genetic research is one of these phenomena that has acquired a social life (Nelson 2016) and has played a growing role in this new weaving of Indigeneity and nation. Peter Wade and his colleagues examined the history of racial and ethnic formation and genetics in Mexico, Brazil, and Colombia, highlighting the importance of attending to historical and social specificity. They showed how genetic projects supported local forms of nationalism, from centering mestizaje in Mexico to revisibilizing Indigenous groups in Brazil (Wade et al. 2014; Wade 2018). Genetic research has emerged as a resource to shape national and individual identity and can reinforce existing national ethnic/racial myths (Hedgecoe et al. 2015; Kent et al. 2015; M'charek 2005; Montoya 2007; Panofsky and Donovan 2019; TallBear 2013; Wade 2014) but it can also emerge as a tool for questioning existing systems of exclusion (Nelson 2016, 2008; Wailoo et al. 2012).

The Argentine forensic geneticist working in Córdoba and the scientists writing these early studies on Y-STRs and mt-DNA, and STR frequencies in the country, imagined a population in-line with the national myth of whiteness (Alberto and Elena 2016; Briones 2005; Joseph 2000) still espoused by the President of the Nation in 2021. Scholars working on race and indigeneity in Argentina have shown the constructed nature of this myth (Helg 1990; Perelman 2017; Stepan 1991) and its effects on the rights of Indigenous peoples in the country (Briones 2015; Gordillo 2011), noting that the 2001 Argentine census was the first recent census to include a question about Indigenous self-ascription (Trinchero 2010). At the same time as the cultural reawakening for urban self-identified European Argentines was underway, Indigenous groups in Argentina were engaged in continued struggles to control their traditional lands (Gilbert 2016; Mason-Deese et al. 2017). Felix Diaz, a Qom leader, interviewed by one of us in 2016, described the never-ending challenge that Indigenous groups faced, saying that their situation hadn't changed at all despite this seeming recognition of their role in Argentina's history: "*Así que estamos ahí, como siempre. Algún funcionario de bajo rango nos visita, parece una visita turística, no hay una solución y volvemos a lo mismo. Eso es lo que nos preocupa.*" (We are here, as always. Some low-level bureaucrat will visit us, it's like a tourist visit, there isn't a solution, and we return to the same [situation]. That is what worries us) (Diaz 2016).

Despite the new census findings and the genetic characterization of the nation that had increased the visibility of Indigenous heritage, for Diaz and other activists, the question remained how this could come to benefit culturally and politically organized Indigenous people in the country. How might these 'incidental' findings and new identities in the making lead to practical support for their ongoing struggles for land ownership, language revitalization, and cultural patrimony? The Argentine case points to the way that syncretism may be invisible on the surface, the syncretic



work happening in the individual choices of scientists to make Indigeneity present for statistical identification and then absent in social identification. It is incorporated to correctly identify individuals but then immediately made invisible through practices of discretion necessitated by a projected shame of non-whiteness. The work of the forensic geneticist in drawing a line between what is central and incidental to genetic practice, maintained the status quo of the national myth of whiteness. The syncretism is revealed and put to work years later in the reimagining of Argentina as a multi-ethnic nation, challenging the myth of whiteness and the erasure of Indigenous peoples.

Contextualizing disappearance in Mexico

Mexico suffers a humanitarian tragedy of enormous proportions. Adding to the history of dispossession and forced disappearance of the second half of the twentieth century, in which “uncomfortable populations” were targeted with the same tactics of terror that were applied in the rest of the region, the disappearance of 43 Indigenous students of rural Ayotzinapa in September 2014 has been described by anthropologist Claudio Lomnitz as a turning point in the forcefulness and brutality of state irresponsibility (Lomnitz 2016), especially with respect to Indigenous people. This episode also made evident the fragmented, heterogeneous and transitory state of forensic science formations in the country (García-Deister and Smith 2016). The intensive search for the students by federal and state authorities uncovered multiple mass graves that did not belong to the 43 disappeared. Who were these other bodies?

An emergent civil organization, *Los otros desaparecidos de Iguala* (The other disappeared of Iguala), was formed in the wake of these findings. Looking for guidance on how to organize their own search efforts and legal demands, the group turned to the *Equipo Mexicano de Antropología Forense* (EMAF). The EMAF met with a group of farmers, laborers, traders, and homemakers. As heterogeneous as the group was in terms of what they did for a living, the forensic team reported, they had one thing in common: “Most of them were extremely precarious and vulnerable people, whose work barely provided essential necessities. In addition, most of them were Indigenous women, searching mothers or grandmothers, many of them sick, who could not read or write, and who spoke a native language” (Equipo Mexicano de Antropología Forense (EMAF) 2015). Human rights violations to these individuals and their communities take place in a context marked by systematic and long-lasting patterns of social exclusion that disproportionately affect Indigenous people. They are subjected to racism before their disappearance, which makes them even more vulnerable to violence. They are racially targeted by the state or organized crime—sometimes in collusion—and they are disappeared. After their disappearance, their families are denied legal services on account of their social standing and identity.

Despite the increasing mobilization and political activism of numerous Indigenous groups and family collectives over the past 10 years, clandestine mass graves have continued to proliferate. By 2017 the number of graves had reached 3024 (González-Núñez et al. 2019). One of the latest estimations of the number of



unidentified human remains kept in forensic services across the country is 50,505 (Movimiento por Nuestros Desaparecidos en México (MNDM) 2020). It is now commonly asserted that only a multidisciplinary and participatory model of forensic work based on care can begin to address the current ‘forensic crisis’ (Mecanismo Extraordinario de Identificación Forense (MEIF) 2021). In this section we look at a diversity of forensic practices in Mexico, and through the lens of genetic syncretism we shed light on the various ways in which care, incorporation of Indigeneity and ritual take place.

Trying to make sense of sacrificial ritual more than 500 years ago, anthropologist Blanca González approached a pre-Hispanic burial site containing 34 complete skeletons, 92 skulls, and a smaller number of hands and feet found in front of a pyramid in the Mexican state of Morelos in 1963, with the tools of physical anthropology, archeology, taphonomy, and history (González-Sobrino et al. 2001). She has also approached ancient burial sites with the tools of genetics. Ancient DNA analysis revealed a wide genetic diversity among neighboring groups of Mexico’s central valley during the classic period and suggested a multi-ethnic origin of the Teotihuacán population (Aguirre-Samudio et al. 2016). González has over the years built a collection of thousands of DNA samples obtained from pre-Hispanic remains, but also from contemporary Indigenous populations located in the north, center, south and southeast of Mexico. At the molecular anthropology lab of the Universidad Nacional Autónoma de México (UNAM), her team has traced maternal and paternal lineages using mitochondrial and Y-chromosome DNA, respectively. They’ve also built a library of autosomal DNA markers. For González, studying the genetic diversity of Indigenous populations (old and recent) not only contributes to the historical and anthropological records of the nation, but may also prove to be useful in the context of Mexico’s current forensic crisis.

Although the arrangement of human remains in clandestine mass graves obeys a different kind of burial ritual, here too, partial skeletons, torsos, skulls, and hands are a common sighting. Some of these body parts have made their way into the refrigerating chamber used for cadaveric remains in Mexico City’s Institute of Forensic Science (INCIFO), a site of our fieldwork in 2017–2018. One morning, one of us followed a forensic expert into the chamber to find a leg. It was ‘corroded’, and its stench outcompeted that of the rest of the bodies in the chamber. On a necropsy table, the examiner separated the rotting flesh and cut a V shape into the femur (a ‘wedge cut’) with a surgical saw. Back in the laboratory, the bone fragment was washed and demineralized, which prepared it for DNA extraction. This procedure is part of the protocol also used for extracting DNA from pre-Hispanic remains, but unlike the ancient burial sites that González has studied, this bone sample was lacking a context. The only clue to this person’s identity was their partial leg, a piece of their femur. DNA extracted from the bone sample will yield a genetic profile that will be added to a database of unidentified remains, but the chances of identifying a person only through a positive match on a genetic database are slim.

Forensic experts constantly speak of the need for “context” to support an identity hypothesis: archeological information regarding the burial site, geographic location and biological profile are standard requirements, but these are not always attainable. Context, in the realm of forensic genetics in Mexico, more often means population



data. In accordance with the trihybrid (Native American, European and African) model of admixture that informs analysis of DNA samples in Mexico (Wade, López Beltrán, & Restrepo, *Mestizo Genomics*, 2014), an estimate of where on a cline of Native American and European ancestry does the unidentified sample fall might orient the identification hypothesis towards a certain subpopulation (for example, an urban mestizo or an Indigenous Zapoteca). But according to González, scientists may be quick to see a correlation between geography, language and group belonging that does not really exist, which is why it is important to establish how genetic frequencies are distributed regionally and whether there are loci specific to different Indigenous subpopulations. All of this “depends on vast historic and demographic knowledge of the territory and of the phenomenon of regionalization,” she insists (González-Sobrino 2020, p. 108).

Over the past decade, human identification practice has settled on a core set of short tandem repeat (STR) loci widely used for generating genetic profiles useful for identification. A variety of commercial kits are available that allow for the amplification of these core STR loci, which form the basis for forensic DNA databases worldwide. In Mexico, geneticists usually analyze 15 to 24 STR loci using commercial kits containing a predefined set of markers. While the use of these technologies speaks to the participation of (a few) Mexican forensic labs in standardized international practices, and the shared loci potentially enables comparison of genetic profiles across different institutions and national contexts, geneticists in Mexico often voice concerns over their utilization. They worry that the genetic variability of the population may not be adequately captured in international databases such as the Hispanic reference population developed in the U.S. and used by the FAFG in Guatemala and also in Mexico. They worry that commercial STR batteries may be insufficient to obtain precise identifications, or that they are missing out on valuable information that might aid in the administration of justice. Diana Bustos, founding member of the *Equipo Mexicano de Antropología Forense* (EMAF), considers that “consensus markers have high chances of false positives when used in situations where there are so many unidentified individuals, like in the case of Mexico” (Bustos 2020, p. 82). In other words, they worry that practices in forensic genetics have been standardized to the detriment of national context, regionalization, and genetic history. “Mexico does not behave like a single group; it has a huge cultural diversity that responds to past and present histories that we can observe in the population’s genetics. Even if there is a database (CODIS) that is used internationally, it could be adapted according to regionalizations whose population samples will behave consistent with genetic population models” (Aguirre-Samudio 2020, p. 14).

These questions of population history and context become even more important when forensic services deal with skeletal, degraded, or contaminated remains that often yield incomplete profiles, making the statistical inferences more central to the process of making a match. Victim advocates and scientists we’ve spoken with have recognized the importance of reference databases as practical tools for justice in the midst of incomplete sites and fragmented forensic practices. If, as social anthropologists working with *buscadoras* -women who have organized into collectives to search for human remains- have documented, most of the bodies found in clandestine mass graves are brown, racialized, and poor (Robledo and Hernández 2019), then they are



overrepresented in the morgues and, potentially, in DNA databases of unidentified remains. In the absence of the proper tools for their identification, forensic experts assert, these racialized bodies are fated to disappear once again.

The idea that racialized bodies suffer a double disappearance has become increasingly ubiquitous: Indigenous bodies are targeted either by state authorities or by criminal groups with the acquiescence of the state and are disappeared. If their bodies are found in clandestine mass graves (overwhelmingly they are dug up by family collectives run by searching mothers and not by the state), they are sent to the morgues, only to disappear once again. Forensic facilities in Mexico are overflowing with bodies, so sending unidentified remains to the common pit to make room for new incoming remains is common practice (García-Deister 2019). In understaffed and underfunded facilities, the keeping of records is scant if there is any record-keeping at all. Racialized but undifferentiated, the bodies vanish a second time in the interstices of forensic procedures. The incorporation of Indigeneity and the history of admixture into forensic DNA technologies is seen by many geneticists as one of the corrective measures that need to be taken to prevent this from happening over and over.

Yet for researcher-activists Carolina Robledo and Aída Hernández, constant deferring to genetics experts as those who will provide the technological solution to the forensic crisis contributes to the “disappearance device,” one that operates against those that “have been construed as disposable in a classist, racist, and sexist society” (Robledo and Hernández 2019, p. 11). Excessive focus on genetics has the effect of dismissing collective organizing -especially by women- as forensic knowledge production. The extent and complexity of disappearance in Mexico, argue Robledo and Hernández, calls for the construction of ‘dialogues of knowledge’ that cut across disciplines and overcome obsolete forms of engagement, such as the asymmetric enrollment of (usually male) ‘experts’ in the struggles of underserved classes.

Through the creation of the *Grupo de Investigaciones en Antropología Social y Forense* (GIASF) Robledo and Hernández aim to foster a just epistemological project that expressly incorporates the expertise of family collectives and *buscadoras* -those unintended but now essential specialists in the search and recovery of inhumed bodies. This project of incorporation coexists with that of molecular anthropologists like González, for whom the challenge is to reconfigure forensic genetic knowledge (which loci? which reference databases?) by including the genetic history of the Mexican population since pre-Hispanic times. While they differ in aims, epistemes and practices, both kinds of projects explicitly acknowledge that the main demographic of unidentified remains is constituted by racialized bodies who deserve to be named and treated with care.

From syncretism to genetic syncretism

Syncretism (n) from the Greek συγκρητισμός. The amalgamation or attempted amalgamation of different religions, cultures, or schools of thought.

- Oxford Dictionaries (lexico.com)



Syncretism is a cultural feature of Latin America, with public symbols and cultural forms rehearsing Indigenous and European mixings. It is this lived experience of power-laden, incongruous mixing that we conjure in the idiom of genetic syncretism, one where appropriation, essentialization, shared meaning, Indigenous visibility, and legacies of domination are all present. Over the past twenty years, scholars in anthropology, STS, and religion have reintroduced the idea of syncretism, using the concept to bring attention to processes of cultural formation under globalization, hybridity, and modernity (Droogers 2015; Stewart and Shaw 1994). Through the work of John Law and his colleagues, syncretism has entered science and technology studies as a way of understanding how practices that don't cohere still fit together in good ways (Law et al. 2014). Reading these traditions together, alongside work in religious studies (Leopold and Jensen 2014), syncretism brings our analytic focus to the situated practices by which diverse beliefs, practices, epistemologies and ontologies can come together and hold for a time. Syncretism helps us to understand how Indigeneity and its local histories of Indigenous exclusion and inclusion are rehearsed in forensic genetics. In the following sections, we analyze each of the cases that we presented as examples of genetic syncretism, highlighting three elements: (1) coming together in care, (2) incorporation, and (3) ritual practices.

Coming together in care

The term 'syncretism' likely originates in Plutarch's *Moralia* in an essay on Brotherly love. He offers the term to admonish brothers to unify in the face of a common enemy even if they have disagreements. He suggests that this is a central practice in Crete, thereby developing the term syncretism-the coming together of Cretans (Plutarch 1939). In syncretism, Plutarch offers an ideal form of sociality emerging in love and care. To be syncretic is to stand together against a common attack even in the face of difference. It is not the erasure of that difference or even a complete melding but rather a strategic coming together based on love and duty.

In genetic syncretism, we argue that coming together in care, in the sense of Plutarch's syncretism, is one way Indigenous organizing and forensic genetics come together. That coherence is strategic but also affectively laden. That Indigenous groups and forensic scientists ally around identification projects, doesn't erase their differences in purpose or aim. That Indigenous people advocate for and actively contribute to genetic databases highlights this strategic coming together, but it remains syncretic in that the interests, beliefs, and concerns of forensic praxis and Indigenous organizing do not become one and the same. Instead, differing concerns and beliefs about genetic samples, genetic story-telling, and genetic work cohere for a time in a shared project centered around caring for the dead. Forensic scientists in Latin America often articulate their work as a type of care (Olarte-Sierra and Pérez-Bustos 2020; Smith 2016), advocating a type of scientific work that explicitly embraces activism and social commitments to the victims of violence. Indigenous organizers and community advocates who work to build enough trust, access, and mutual intelligibility between forensic scientists and local communities also describe their work as centered in care -both care for the dead and for the grieving, searching family



members. This kind of coming together in care is most visible in the work of the FAFG in Guatemala, where forensic scientists and Mayan communities that advocate genetic databanking and identification often come together to mount campaigns for DNA collection and for a general societal acknowledgement of the genocide. These two practices exist in tandem in a single campaign, but do not collapse into each other, allowing for moments of care. Communities come together. But also different ideas about Indigeneity and forensics come together to care for the victims of violence, to make better identifications in the case of Mexico, or to be able to return a body in the Argentine case. In this type of care, assumptions about the nation, race, and identity (both individual and collective) are reworked in this moment of care, leading to a more visible presence of Indigenous histories, albeit not always of Indigenous groups and their struggles. The power of thinking of these moments as syncretic is that it brings our attention to both the importance of care work while resisting a reading of forensic science as primarily about care of the community. It is only when local community groups and forensic scientists come together despite their differences that these particular forms of forensic care can emerge.

While our fieldwork focused primarily on forensic experts and their labs, our exposure to the context of disappearance, death, search teams, and forensic science made us acutely aware of all the elements that come together in the crisis of violence and the processes advocated for its redress. In Mexico, “Every group of *buscadoras* has their own anthropologist,” said a mother from Tamaulipas. Her observation was meant to point out the upended nature of the situation: those with professional credentials were the ones coming to learn from the self-made *buscadoras* and take part in the searches, not the other way around. It is precisely the fact that those with affective attachments to the disappeared have become the specialists -specialists by other means- in charge of the process, that “the experience of search and exhumation of human remains manifests in multiple and complex dimensions” (Robledo and Hernández 2019, p. 17). It is their care that brings together these communities, but in that process, the work of forensics itself is made more capacious. As Robledo and Hernández describe, “these processes are not limited to the retrieval of evidence, but rather constitute dense symbolic and political worlds” (Robledo and Hernández 2019, p. 17) that include so much more: love, resistance, spirituality, history, struggle. In some cases, these worlds also include forensic experts and the state.

For the EMAF, their collaboration with collectives such as Red de Madres has revealed that the search process not only implicates the recovery of bones and the genetic identification of human remains in a laboratory but a “work of meticulous, patient and fragile interweaving that includes material and discursive practices as well as intricate relations between science, technology, activism, and the state” (Torres 2020, p. 192). For the FAFG, the experience of working with Indigenous communities to document and prosecute genocide to only have the conviction immediately overturned in a political process (Burt 2016) points to both syncretism as coming together in care and the *fragility* of this type of forensic praxis based in care (Torres 2020). While syncretism brings our attention to how things cohere despite their differences, it can also help explain how and when that coherence collapses.



Incorporation

Charles Stewart in his essay “Syncretism and Its Synonyms” offers a history of anthropological approaches to syncretism, diagnosing a major divide between old world and new world colonialisms and their analytics of syncretism (Stewart 1999). In the new world, syncretic forms emerged in nation-building paradigms like the melting pot and *mestizaje* as tools of nationalism in emergent states in the U.S. and Latin America. The mixing of cultural forms in syncretism, rather than weakening the original categories, made them resilient, innovative, and ideal models for the cultural (assimilationist) and political (nationalist) goals of the time/space of the new world (Stewart 1999, pp. 49–50). For example, Herskovits’ work on syncretism in African American culture offered syncretism as a tool of resistance to domination and the syncretic as a space of cultural survival in the face of systemic racism and the violence of slavery (1999, p. 50). His work and the idea of syncretism as a form of resistance and cultural persistence was later taken up by racial rights activists as a means of recognizing and revitalizing African cultural contributions in the United States.

Within genetic syncretism, we theorize this space of syncretism, where mixing is tied to resilience and survival through the idiom of *incorporation*. By incorporation, we point to moments where Indigenous practices, beliefs, and interests are brought into genetic practice but not subsumed by it. This can and does sometimes take the form of appropriation; but it also exceeds that formulation as Indigenous peoples, their interests, and their practices become incorporated into genetics in more than reductionist ways. Genetic syncretism as a space of incorporation allows us to attend to the bodily and material aspects of these mixings where living and dead bodies are brought into forensic databases, research, and justice initiatives in ways that visibilize Indigenous presence and practice.

In the work of the FAFG, Indigenous people are incorporated as partners in documenting and mourning genocide. In the work of Guatemala’s genetics lab, Indigenous samples are also understood as statistically indistinguishable from a generic U.S. Hispanics database. Mayans emerged as Indigenous when they were targeted for elimination through genocide, through their cultural practices but not through their genes. Clyde Snow, who helped found both the FAFG and EAAF, imagined the mixing of genetic identification and Indigenous interests as a pathway for practical alliances and solidarities. He offered the idea of genetic databanks for ‘Indians,’ funded by ‘Indians’ as solidarity. Forensic genetics could build new forms of Indigenous community and at the same time strengthen a tool that he saw as offering justice in the face of a shared history of violent conquest. Indigeneity in the lab emerged in day-to-day practice when lab members discussed the samples coming from the highlands and other massacre sites. The FAFG worked to incorporate Indigenous funding, cultural practices, and genes and, in the fourteen years since the initial certification of the lab, came to see profiles that were once deemed as statistically identical to U.S. Hispanics as resources for tracing the long history of Mayan survival in Mexico and Guatemala.

In the case of the EAAF, moments of incorporation in genetic syncretism are less overt as Indigenous bodies are made, identified, and then purified of Indigeneity in



the reporting. In the day-to-day work of human rights genetics in Argentina, Indigeneity was understood as incidental and troubling but outside of the scope of scientific practice. However, at the same time, these geneticists, because of their incidental findings in forensics, began a research program to collectively document Argentina's erased Indigenous *antepasados*. These missing ancestors came into view through a syncretic mix of activism, genetic identification, and scientific imaginaries, not in the individual work of identification but at the societal level of rewriting the national narrative of belonging and inclusion.

The effort to incorporate indigeneity into forensic genetics in Mexico contrasts with the ways in which Indigeneity was treated in Argentina, where admixture is seen as incidental and outside the identification work of the laboratory. While the use of a Hispanic reference database poses no methodological problem in Guatemala, the search for a forensic reference database more appropriate to the population has become a sign of good forensic practice in Mexico -a mark of biocultural attunement with the history of the nation.

Ritual

When anthropologists began writing about scientists and their communities, the study of ritual, albeit somewhat tongue-in-cheek, was a common practice (cf Gusteron 1996; Latour and Woolgar 1979; Traweek 1988), with analysts pointing to the ritualized practices within the laboratory as a way of highlighting the social construction of scientific facts. Ritual has not remained an important site of analysis for STS; however, it remains a central analytic space in syncretic analyses. Rituals often make syncretism visible, putting on display cultural and religious (re)mixings. For example, in Beatty's work on syncretism and public ritual in Mexico, he shows how masses and public events to celebrate the canonization of Juan Diego, the Indigenous man who was visited by the Virgin of Guadalupe, a dark-skinned, Nahuatl speaking Madonna, mixed together Indigenous and catholic ritual (Beatty 2006). These syncretic rituals importantly don't resolve or flatten difference: "[Syncretism] invites us to consider ritual in complex societies as a temporary and tactical truce, a point of consensus (often containing, in both senses, dissension) between divergent groups and categories of persons within a single political formation" (2006, p. 332). Ritual spaces allow incoherence and even cross-purposes to coexist without a demand for reconciliation or resolution.

In forensic genetic work, ritual is most visible at excavations and reburials. Part of the engaged practice of human rights forensics in Latin America has centered on incorporating families into the process of searching. Community members, families, and survivors have played an important role in identifying massacre sites or providing clues to where bodies might have been clandestinely buried. The EAAF in Argentina was central to consolidating a form of forensics where ritual and meaning were core values. Forensics for them was an engaged science that served communities rather than defined them. Indigenous peoples remained visible only to the extent that families themselves identified, mourned, and created meaning in these terms,



and yet forensic work contributed to a national reckoning with violent imaginaries of whiteness.

Fredy Pecerelli, in an interview with CBC Radio, described ritual moments of reburial in Guatemala: “Obviously when the reburying happens, the emotions literally explode. And they’re public. They carry the bodies usually through the streets and town centres, sort of in a dignifying march, saying: ‘We’re here. We didn’t do anything wrong. And now we’re back with the families’” (quoted in Bambury 2017). Ritual spaces become both a space of coming together in care and incorporation. It is where community and family involvement is centered and valorized as the culmination of a successful process of forensic identification. These rituals are a way of claiming public space, a way of proclaiming their innocence, and fighting against the erasure of Indigenous people and the genocide that sought to destroy Mayan communities. Mayan organizing far exceeds these syncretic moments, with activists like Rigoberta Menchu running for President and leaders organizing for more inclusive, just, and Mayan-centered futures for the country (Crosby and Lykes 2019; Nelson 1996). Forensic genetics is lauded as making reburial possible—putting a name with a body so that they can be buried and reincorporated into the community. But it too exceeds this moment, reworking the data in its repositories both to provide better identifications but also to engage in forensic research, publish papers, and tell histories about the region.

In Mexico, the most important rituals in forensics are at the moment of excavation rather than reburial. Ideas about the power of genetics, the role of motherhood, and the failure of the nation-state are reworked as self-trained mothers do the work of surveying, excavating, and recovering of bodies—inviting geneticists and anthropologists as witnesses and aids but not as the authority in this space configured as a rejection of the status quo. Mothers perform their expertise and their love and, most of all, their willingness to put their labor into taking on a responsibility seemingly abandoned by the state and other establishment forensic experts. When genetic scientists in Mexico seek to help these families through better data about ethnic distribution, they hope to both draw on these families as a resource and participate in this public reworking of expertise and accountability—not just for justice for individual families but for a more just accounting of the Mexican population. They offer a complex form of *mestizaje*, capable of rejecting the flattening of the national myth of mixing for one that recognizes the inequalities that are produced and reproduced again in who dies, who is identified, and who remains clandestinely buried.

Conclusion

We have offered cases where genetic syncretism, with its focus on care, incorporation and ritual, allows for a methodological move beyond the lab, and also beyond single narratives about the relationship between Indigenous groups and forensic genetics. This is a move beyond a diagnosis of forensic work in Latin America as primarily heroic, centered on helping Indigenous groups achieve justice or in contrast as essentializing and racializing, or reduced to redefining cultural and political groups in individualized genetic terms.



Taking seriously the potential of syncretic modes of analysis, be it the possibility of the syncretic as a form of cultural survival or resistance, the care embedded in its original use as an exhortation to come together in care for one's brother in the face of a common enemy, or an attention to ritual as a resonant dissonance, genetic syncretism allows us to attend to the multiple meanings of Indigenous organizing in forensic genetics. To be clear, by genetic syncretism, we do not mean a utopian vision (often espoused by human rights scientists) of the easy bringing together of Indigenous views and lifeways with genetic scientist's views and lifeways. Instead, genetic syncretism allows us to attend to the contingent socio-material body, asking about the mixings emergent in versions of Indigeneity that proliferate within forensic ontologies. Like religious syncretism, the blending and enfolding of multiple cultural and historical traditions, genetic syncretism acts within broader fields of power where these acts of enfolding can often reinforce the domination of one particular tradition. Racial and ethnic ideologies remain durable (Pollock 2012) in forensic genetics, but through an attention to the syncretic, we can take seriously other forms of endurance that open up potential avenues for reckoning with national narratives of Indigenous exclusion, valorizing the knowledges and practices of emotionally entangled lay practitioners, and advancing the visibility, cultural vibrancy, and interests of Indigenous survivors of genocide.

Declarations

Conflict of interest On behalf of all authors, the corresponding author states that there is no conflict of interest.

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References

- Aguilar-Velázquez, J.A., et al. 2021. Genetic diversity, structure, and admixture in Mayans from Guatemala and Mexico based on 15 short tandem repeats. *American Journal of Physical Anthropology* 175 (1): 238–250.
- Aguirre-Samudio, A.J., B.Z. Gonzales Sobrino, B.A. Alvarez Sandoval, R. Montiel, C. Serrano Sánchez, and A. Meza Peñaloza. 2016. Genetic history of the classic period of Teotihuacan's burials in Central Mexico. *Revista Argentina De Antropología Biológica* 19: 1–14.
- Aguirre-Samudio, A.J. (ed.) 2020. Algunas consideraciones de antropología genética en los estudios forenses. México: Instituto de Investigaciones Antropológicas, UNAM.
- Alberto, P. and E. Elena. 2016. *Rethinking race in modern Argentina*. Cambridge: Cambridge University Press.



- Bambury, B. 2017. Investigators work to identify victims of Guatemala's civil war, 21 years after it ended. CBC Radio, 15 December
- Beatty, A. 2006. The Pope in Mexico: Syncretism in public ritual. *American Anthropologist* 108 (2): 324–335.
- Briones, C. 2005. Cartografías Argentinas: Políticas Indigenistas y Formaciones Provinciales de Alteridad, Buenos Aires: E P I C a.
- Briones, C. 2015 Políticas indigenistas en Argentina: entre la hegemonía neoliberal de los años noventa y la “nacional y popular” de la última década. *Antípoda. Revista de Antropología y Arqueología* (21).
- Broda, J. 2003 La ritualidad mesoamericana y los procesos de sincretismo y reelaboración simbólica después de la conquista. *Graffylia: Revista de la Facultad de Filosofía y Letras* 2, 14–27.
- Burt, J.-M. 2016. From heaven to hell in ten days: The genocide trial in Guatemala. *Journal of Genocide Research* 18 (2–3): 143–169.
- Bustos Ríos, D. 2020. Los estudios de ADN antiguo y su utilidad en la antropología forense. In *Algunas consideraciones de antropología genética en los estudios forenses*, ed. A.J. Aguirre-Samudio, 70–87. México: Instituto de Investigaciones Antropológicas, UNAM.
- Caballero, P.L., and A. Acevedo-Rodrigo. 2018. *Beyond alterity: Destabilizing the indigenous other in Mexico*. University of Arizona Press.
- de la Cadena, M., and O. Starn. 2007. *Indigenous experience today*. London, UK: Taylor & Francis Group.
- Catelli, M.L., et al. 2011. The impact of modern migrations on present-day multiethnic Argentina as recorded on the mitochondrial DNA genome. *BMC Genetics* 12 (1): 77.
- Corach, D., et al. 1997. Additional approaches to DNA typing of skeletal remains: The search for “missing” persons killed during the last dictatorship in Argentina. *Electrophoresis* 18 (9): 1608–1612.
- Crosby, A., and M.B. Lykes. 2019. *Beyond repair?: Mayan women's protagonism in the aftermath of genocidal harm*. New Brunswick, NJ: Rutgers University Press.
- Cullather, N. 2006. *Secret history: The CIA's classified account of its operations in Guatemala, 1952–1954*. Stanford: Stanford University Press.
- De Chadarevian, S. 2010. Genetic evidence and interpretation in history. *BioSocieties* 5: 301–305.
- Di Fabio Rocca, F. et al. 2018. Mestizaje e identidad en Buenos Aires, Argentina. Experiencias desde la búsqueda individual de datos genéticos. In: *Anales de Antropología*, 165–177.
- Díaz, F. 2016. “La situación de los pueblos indígenas no ha cambiado nada.”
- Doretti, M., and C.C. Snow. 2003. Forensic anthropology and human rights. *Hard evidence: Case studies in forensic anthropology*, 290.
- Droogers, A. 2015. Syncretism. In *International encyclopedia of the social & behavioral sciences*, 2nd ed., ed. J.D. Wright, 881–884. Oxford: Elsevier.
- Edwards, E.D. 2020. *Hiding in plain sight: Black women, the law, and the making of a White Argentine Republic*, 1st ed. Tuscaloosa: University Alabama Press.
- Equipo Mexicano de Antropología Forense (EMAF). 2015. Interview with Maria Torres for Migrant DNA Project (PI Smith and García-Deister), Nov 24, 2015.
- Escolar, D. 2011. De montoneros a indios: Sarmiento y la producción del homo sacer argentino. *Corpus. Archivos virtuales de la alteridad Americana*, Vol. 1 (2).
- Esparza, M., H.R. Huttenbach, and D. Feierstein. 2009. *State violence and genocide in Latin America: The Cold War years*. Routledge New York.
- Falla, R. 2001. *Quiché rebelde: Religious conversion, politics, and ethnic identity in Guatemala*. University of Texas Press.
- Fondebrider, L. (2015) Forensic anthropology and the investigation of Political violence. *Necropolitics: Mass Graves and Exhumations in the Age of Human Rights* 41.
- Fondebrider, L. 2002. Reflections on the scientific documentation of human rights violations. *International Review of the Red Cross* 84 (848): 885–891.
- Fondevila, M., et al. 2003. Y-chromosome STR haplotypes in Córdoba (Argentina). *Forensic Science International* 137 (2–3): 217–220.
- García, M., et al. 2009. Analysis of complex kinship cases for human identification of civil war victims in Guatemala using M-FISys software. *Forensic Science International: Genetics Supplement Series* 2 (1): 250–252.
- García-Deister, V., and L.A. Smith. 2016. Ensamblajes de la ciencia forense en América Latina. In *Aproximaciones a lo local y lo global: América Latina en la historia de la ciencia contemporánea*,



- Mexico, Colección Eslabones en la Ciencia, eds. G. Mateos and E. Suárez-Díaz, 269–300. México: Centro de Estudios Filosóficos, Políticos y Sociales Vicente Lombardo Toledano.
- García-Deister, V. 2019. DNA will not solve Mexico's unidentified-body crisis. SLATE Future Tense, 1 Aug, <https://slate.com/technology/2019/08/mexico-unidentified-bodies-missing-families-dna-databases.html>. Accessed 18 Aug 2021
- Gilbert, J. 2016. After centuries of loss, seeds of hope for Argentina's Indigenous People. N. Y. Times, 11 Sept.
- González-Núñez, D., J. Ruiz Reyes, L.G. Chávez Vargas, and J.A. Guevara Bermúdez. 2019. *Violencia y terror: Hallazgos sobre fosas clandestinas en México 2006–2017*. Mexico: Universidad Iberoamericana.
- González-Sobrinó, B.Z. 2020. Apuntes sobre el cromosoma Y. En *Algunas consideraciones de antropología genética en los estudios forenses*, ed. A.J. Aguirre-Samudio, 88–121. México: Instituto de Investigaciones Antropológicas, UNAM.
- González-Sobrinó, B.Z., C. Serrano-Sánchez, Z. Lagunas-Rodríguez, and A. Terrazas-Mata. 2001. Rito y sacrificio en Teopanzolco, Morelos. Evidencias osteológicas y fuentes escritas. *Estudios De Antropología Biológica* x: 519–532.
- Gordillo, G. 2011. Longing for elsewhere: Guaraní reterritorializations. *Comparative Studies in Society and History* 53 (4): 855–881.
- Graham, L.R., and H.G. Penny. 2014. *Performing indigeneity: Global histories and contemporary experiences*. Lincoln: U of Nebraska Press.
- Grandin, G. 2007. Empire's Workshop: Latin America, the United States, and the Rise of the New Imperialism, Holt Paperbacks.
- Green, M. 1986. Dr. Clyde Snow Helps Victims of Argentina's "Dirty War" bear witness from beyond the grave. *People Magazine* 26(23).
- Gusterson, H. 1996. *Nuclear rites : A weapons laboratory at the end of the cold war*. Berkeley: University of California Press.
- Hale, C. 2006. *Más que un indio: Racial ambivalence and the paradox of neoliberal multiculturalism in Guatemala*. Santa Fé: School of American Research Press.
- Hedgcock, A., M. Kent, and P. Wade. 2015. Genetics against race: Science, politics and affirmative action in Brazil. *Social Studies of Science* 45 (6): 816–838.
- Heguy, S. 2005. El 56% de los argentinos tiene antepasados indígenas. Clarín, 16 January: Buenos Aires.
- Helg, A. 1990. Race in Argentina and Cuba, 1880–1930. In *The idea of race in Latin America, 1870–1940. Critical reflections on Latin America series*, ed. R. Graham, 135. Austin: University of Texas Press.
- Iyavoo, S., S. Hadi, and W. Goodwin. 2013. Evaluation of five DNA extraction systems for recovery of DNA from bone. *Forensic Science International: Genetics Supplement Series* 4 (1): e174–e175.
- Joseph, G. 2000. Taking race seriously: Whiteness in Argentina's national and transitional imaginary. *Identities* 7 (3): 333–371.
- Joseph, G.M., D. Spenser, and E.S. Rosenberg. 2007. *In from the cold: Latin America's new encounter with the cold war*. Durham: Duke University Press Books.
- Kent, M., et al. 2015. Building the genomic nation: 'Homo Brasilis' and the 'Genoma Mexicano' in comparative cultural perspective. *Social Studies of Science* 45 (6): 839–861.
- Köhler, A. 2013. Religious syncretism, iconography, and trans-ethnic subjectivity construction: The role of the virgin of Guadalupe in María Cristina Mena's and Cherrie Moraga's literary work. In *Mobile narratives*, 138–150. Routledge.
- Latour, B., and S. Woolgar. 1979. *Laboratory life : The social construction of scientific facts*. Beverly Hills: Sage Publications.
- Law, J., et al. 2014. Modes of syncretism: Notes on noncoherence. *Common Knowledge* 20 (1): 172–192.
- Leopold, A.M., and J.S. Jensen. 2014. *Syncretism in religion: A reader*. London: Routledge.
- Levin, L.G. 2015. Cuando la periferia se vuelve centro. La antropología forense en la Argentina: Un caso de producción de conocimiento científico socialmente relevante. *Cuadernos De Antropología Social* 42: 35–54.
- López Caballero, P., and A. Acevedo-Rodrigo, eds. 2018. *Beyond Alterity. Destabilizing the Indigenous Other in Mexico*. Tucson: The University of Arizona Press.
- Lomnitz, C. 2016. *La nación desdibujada*. Barcelona: Malpaso.
- Marignac, M., et al. 2004. Characterization of admixture in an urban sample from Buenos Aires, Argentina, using uniparentally and biparentally inherited genetic markers. *Human Biology* 76 (4): 543–557.



- Marino, M., A. Sala, and D. Corach. 2006. Population genetic analysis of 15 autosomal STRs loci in the central region of Argentina. *Forensic Science International* 161 (1): 72–77.
- Martínez-Espin, E., et al. 2006. Guatemala Mestizo Population Data on 15 STR Loci. *Journal of Forensic Sciences* 51 (5): 1216–1218.
- Mason-Deese, L., N. Clare, and V. Habermehl. 2017. A mysterious death in Argentina draws attention to indigenous land struggles. *The Conversation*.
- M'charek, A. 2005. The mitochondrial eve of modern genetics: Of peoples and genomes, or the routinization of race. *Science as Culture* 14 (2): 161–183.
- Mecanismo Extraordinario de Identificación Forense (MEIF) (2021). Coordinating Team Panel, Simposio Internacional de Identificación Huana, 15 October, Mexico City.
- Menchú, R., and E. Burgos-Debray. 1984. *I, Rigoberta Menchú: An Indian Woman in Guatemala*. Verso.
- Merlan, F. 2009. Indigeneity: Global and local. *Current Anthropology* 50 (3): 303–333.
- Montoya, M.J. 2007. BIOETHNIC CONSCRIPTION: Genes, race, and Mexicana/o ethnicity in diabetes research. *Cultural Anthropology* 22 (1): 94–128.
- Movimiento por Nuestros Desaparecidos en México (MNDM). 2020. Más de 50,000 personas fallecidas sin identificar en los servicios forenses del país. Press release, 10 Dec, <https://movndmx.org/implementation-meif-2020/>. Accessed 18 Aug 2021.
- Muzzio, M., et al. 2018. Population structure in Argentina. *PLoS ONE* 13 (5): e0196325.
- Nelson, A. 2008. Bio science: Genetic genealogy testing and the pursuit of African ancestry. *Social Studies of Science* 38 (5): 759–783.
- Nelson, A. 2016. *The social life of DNA: Race, reparations, and reconciliation after the genome*. Boston, MA: Beacon Press.
- Nelson, D. 1996. Maya hackers and the cyberspatialized nation-State: Modernity, ethnonostalgia and a lizard queen in Guatemala. *Cultural Anthropology* 11: 287.
- Niezen, R. 2003. *The origins of indigenism: Human rights and the politics of identity*. Berkeley: University of California Press.
- Olarte-Sierra, M.F., and T. Pérez-Bustos. 2020. Careful speculations: Toward a caring science of forensic genetics in Colombia. *Feminist Studies* 46 (1): 158–177.
- Oldt, R.F., and S. Kanthaswamy. 2020. Expanded CODIS STR allele frequencies—Evidence for the irrelevance of race-based DNA databases. *Legal Medicine* 42: 101642.
- Panofsky, A., and J. Donovan. 2019. Genetic ancestry testing among white nationalists: From identity repair to citizen science. *Social Studies of Science* 49 (5): 653–681.
- Parker, L.S., A.J. London, and J.D. Aronson. 2013. Incidental findings in the use of DNA to identify human remains: An ethical assessment. *Forensic Science International: Genetics* 7 (2): 221–229.
- Perelman, M.D. 2017. Notes about racist Argentina and a class-based government.
- Plutarch. 1939. On brotherly love. In: *Moralia*. Volume VI. Loeb Classical Library, 243–326. Cambridge, MA: Harvard University Press.
- Pollock, A. 2012. *Medicating race: Heart disease and durable preoccupations with difference*. Durham: Duke University Press.
- Pye, M. 1971. Syncretism and ambiguity. *Numen* 18 (2): 83–93.
- Robledo-Silvestre, C. and R.A. Hernández-Castillo. 2019. Dossiê: Diálogos entre la antropología social y las ciencias forenses. *Abya-yala: Revista Sobre Acceso á Justiça e Direitos nas Américas* v.3, n.2: 7–23.
- Rosenblatt, A. 2015. *Digging for the disappeared: Forensic science after atrocity*. Stanford: Stanford University Press.
- Rosenblatt, A. 2010. International forensic investigations and the human rights of the dead. *Human Rights Quarterly* 32 (4): 921–950.
- Sala, A., et al. 1999. Reference database of hypervariable genetic markers of Argentina: Application for molecular anthropology and forensic casework. *Electrophoresis* 20 (8): 1733–1739.
- Salas, A., et al. 2008. Gender bias in the multiethnic genetic composition of central Argentina. *Journal of Human Genetics* 53 (7): 662–674.
- Sanford, V. 2003. *Violencia y genocidio en Guatemala*. F & G Editores.
- Smith, L.A. 2016. Identifying democracy: Citizenship, DNA, and identity in Postdictatorship Argentina. *Science, Technology, & Human Values* 41 (6): 1037–1062.
- Smith, L.A. 2017. The missing, the martyred and the disappeared: Global networks, technical intensification and the end of human rights genetics. *Social Studies of Science* 47 (3): 398–416.
- Snow, C.C., et al. 2008. Hidden in plain sight: xx burials and the desaparecidos in the Department of Guatemala, 1977–1986. In: *Statistical methods for human rights*, 89–116. Springer.



- Stepan, N. 1991. *The hour of eugenics : Race, gender, and nation in Latin America*. Ithaca: Cornell University Press.
- Stewart, C. 1999. Syncretism and its synonyms: Reflections on cultural mixture. *Diacritics* 29 (3): 40–62.
- Stewart, C., and R. Shaw, eds. 1994. *Syncretism/Anti-syncretism: The politics of religious synthesis*. London: Routledge.
- Stuesse, A., et al. 2013. Sí Hubo Genocidio: Anthropologists and the Genocide Trial of Guatemala's Ríos Montt. *American Anthropologist* 115 (4): 658–663.
- TallBear, K. 2013. Genomic articulations of indigeneity. *Social Studies of Science* 43 (4): 509–533.
- Torres, M. 2020. ADN Ciudadano: Autoorganización forense y tecnociencia ciudadana en México. Doctoral thesis, UNAM, Mexico.
- Traweek, S. 1988. *Beamtimes and lifetimes: The world of high energy physicists*. Cambridge: Harvard University Press.
- Trinchero, H.H. 2010. Los pueblos originarios en Argentina. Representaciones para una caracterización problemática. *Cultura y Representaciones Sociales* 4 (8): 111–139.
- Wade, P. 2018. Comparing genomic narratives of human diversity in Latin American nations. *Ethnic and Racial Studies* 41 (6): 1074–1092.
- Wade, P., et al. 2014. *Mestizo genomics: Race mixture, nation, and science in Latin America*. Durham: Duke University Press.
- Wade, P. 2007. *Race, ethnicity and nation: Perspectives from kinship and genetics*. New York: Berghahn Books.
- Wade, P. 2014. Race, ethnicity, and technologies of belonging. *Science, Technology, & Human Values* 39 (4): 587–596.
- Wailoo, K., A. Nelson, and C. Lee. 2012. *Genetics and the unsettled past: The collision of DNA, race, and history*. Ithaca, NY: Rutgers University Press.
- Ye, J., et al. 2004. A simple and efficient method for extracting DNA from old and burned bone. *Journal of Forensic Science* 49 (4): 1–6.

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