

BIOLOGICAL IDENTITY AND ‘RESTITUTION’ IN ARGENTINA: FURTHER CRITICAL ARGUMENTS

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Abstract. In this paper we will briefly explain the context in which the appropriation of 500 children occurred during the most recent Argentinian dictatorship, in order to analyze the political demand of identity restitution of these people. We will describe the phenomenon of restitution that took place thanks to the strategy of *Abuelas de Plaza de Mayo*, and we will analyze both the role of genetics on the restitution as well as some criticisms to a notion of biological identity considered to emerge from it. We will situate those criticisms in the philosophical debate over personal identity. The main purpose of this paper is to offer two arguments against an alleged genetic notion of personal identity. Firstly, a theoretical argument presents reasons on the basis of contemporary biological knowledge and, secondly, a practical argument refers to the productive role of biotechnologies. Finally, we will discuss some problems that arise from the criticisms themselves in order to give reasons for a defense of the restitution demand.

Keywords: personal identity • restitution • *Abuelas de Plaza de Mayo* • grandpaternity index • DNA • produced identity

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1. Argentinian dictatorship, appropriation and restitution

1.1. Socio-political context

The end of 1975 was a time of great turmoil for the Argentinian society. These days were marked by social conflict and an economic crisis; the administration of Isabel Perón suffered from weak governance, despite having been democratically elected. Social confrontation involving workers reached unprecedented participation and explicit belligerence. This continued to occur in spite of great efforts to prevent con-



flict made by the trade-unions bureaucracy closely tied to the government. On the other hand, the heads of the rural, industrial and financial sectors, also deeply discontented, relentlessly harassed the political power by means of speculative actions such as generating shortages of goods and continuous lock-outs, thus reinforcing the profound crisis society was immersed in. The Armed and Security Forces, in turn, rooted in the tradition of actively meddling in the political destinies of the country, made the decision to put an end to the administrations' constitutional mandate. One of the excuses for the coup was the actions of the urban and rural guerrillas, which operated practically all over the national territory. Nevertheless, these actions were a ploy for the coup rather than a real danger. In fact, several documents of the Armed Forces emphasized that guerrilla violence had become a police issue by the end of 1975. The coup d'état of March 24th 1976 aimed to discipline the Argentinian society as a whole, so as to radically modify the distribution of the economic income for the benefit of power groups linked to the international financial establishment. Far from constituting a project of "National Reorganization", as its mentors liked to call it, it was the political coronation of markedly anti-national sectors, to whom everything "popular" was as alien as it was dangerous. The leaders of the Church blessed this civil-military coup and its procedures.

The civil-military dictatorship (1976–1983) instituted a regime of State-terrorism all over the country. It had a two-fold functioning: On the one hand, it had a public lawful facade, while its other face was clandestine and unlawfully. The primary methods of the latter were terror and mass crimes (Duhalde 1983). The Argentinian dictatorship was marked, among other things, by the practice of the disappearance of people held in clandestine centres of detention, torture and extermination — there were more than 700 of those in the country. 30.000 men and women were tortured and killed in these centres, they were disappeared and, in most cases, buried in mass graves. Before they were killed, the disappeared-detainees were tortured, both physically and psychologically. Besides, thousands of people were exiled and approximately 10.000 people were detained in prisons without trial (see Duhalde 1983; Conadep 1991; Calveiro 1998; Izaguirre 2009).

The clandestine activity of the military included the disappearance of approximately 500 offspring of the political disappeared-detainees. Many of the children were born in captivity, since their mothers had been detained and kept in the clandestine centres while pregnant. Other children were violently kidnapped together with their parents. In both cases, many of the children were "appropriated": They were given to members of the military force or families close to them, who made them pass as their own or illegally "adopted" them by forging their identity papers. In some cases, the children entered the adoption system and were adopted in good faith, because the adoptive parents did not know where they came from. Nonetheless, in no case were the children purposefully and legally *given* for adoption. These

children were raised without any knowledge whatsoever of their origins. Hence, the State was directly responsible for the appropriations, for the falsification of identity papers and public documents and for the illegal adoption procedures in every case.

What was the purpose of the children's robbery? Unlike the case of their parents, the aim of the plan of appropriation was not to exterminate the children, but to substitute their identities. Public documents were falsified with that purpose, described by the specialists as that of "rescuing" the children from their parents, to give them "good families", to save them from their parents' ideology and from a "subversive home", i.e., to create *new subjects* (Duhalde 1983; Villalta 2010). In 2012 the Justice established that appropriation was a systematic plan devised by the Armed Forces and the crime of appropriation was considered a crime *against humanity*.

How was the issue treated in the Argentinian Justice? How were the proofs provided and what were they based on? In order to punish the systematic plan of appropriation, a peculiar fight –which proved to be an example of struggle for Human Rights all around the world– was fundamental: The search of the appropriated children by the organization *Abuelas de Plaza de Mayo* (APM). This civil organization was born during the dictatorship, in 1977. It was formed by the grandmothers of the robbed children, with the purpose of finding them and that they could reunite with their real families. The endeavor of APM achieved significant results, one of them is the formation of the *Equipo Argentino de Antropología Forense* (Argentinian Forensic Anthropology Team) in 1984. This scientific organization's work is to locate and identify the corpses of the detained-disappeared people. Another significant achievement is the creation of the *Banco Nacional de Datos Genéticos* (BNDG) (National Genetic Data Bank) in 1987, which contains the genetic maps of the relatives of the disappeared children, as well as the foundation of the *Comisión Nacional por el Derecho a la Identidad* (National Commission for the Right to Identity) in 1992. APM's struggle also had consequences in the legal field: three Articles were included in the *United Nations Convention on the Rights of the Child*: the articles 7, 8 and 11, which establish that governments must protect children's identities. The DNA law (Law 24549/2009) was also approved in the country, allowing a judge to order the taking of *Deoxyribonucleic Acid* (DNA) from a suspect or a victim in order to verify their identity, whether they agree to it or not.

1.2. Restitution and the role of genetics

At present, the methods available to determine kinship relationship are various, they include Human Leukocyte Antigens (HLA) typing or the analysis of Deoxyribonucleic Acid (DNA) by different techniques. What they all have in common is that they are grounded on the comparison between the samples of two people in order to exclude kinship or to establish it with a certain degree of probability. The higher the prob-

ability, the more robust is the conclusion of that comparison. The key point for the comparison is to use those structural regions of DNA or certain features in the HLA macromolecular structure that have a great variation in the population, in such a way that the probability that two people share these characteristics, because they are related, is much greater than their coincidence by chance.

HLA are proteins found in most cells, but largely in white blood cells, since they play a key role in the immune system as antigens. HLA proteins are varied and each person has a relatively unique set of these antigens as a result of inheritance. Moreover, some HLA types are more frequent in certain populations than in others. Hence, kinship determination by means of HLA typing is not as conclusive as by direct DNA analyses.

Briefly, DNA tests consist of obtaining DNA fragments from the person's sample in order to analyze if they match those obtained from the reference samples (samples from putative relatives). During the 1980s, the *Restriction Fragment Length Polymorphism* (RFLP) method was developed. It consists in a DNA purification from blood samples, followed by "digestion" by restriction enzymes. In this step, enzymes "cut" the DNA molecule in very specific sites, which results in fragments of different sizes that depend on the particular DNA of that person. Afterwards, the fragments are separated by electrophoresis and ordered according to their molecular size; this is how an *individual DNA profile* is obtained. Since the DNA of a person is inherited from their biological progenitors, it is expected that half of the fragments matches one progenitor's, and the other half matches the other's. When that match is found in paternity tests, parenthood is determined. If too many fragments do not match one of the parents', parenthood is excluded with a probability of 99.99% or higher.

Currently, DNA analysis are performed by means of *Polymerase Chain Reaction* (PCR). This technique, developed in the 1990s, is cheaper and faster than the previous one, and can be carried out with a very small sample from any part of the body (usually a buccal swab). It consists in producing a large quantity of copies of certain parts of the DNA molecule in order to obtain a high concentration of the fragments. Similar to the RFLP method, fragments are compared with those from both parents with a probability of exclusion of paternity of 99.99% or higher.

Nowadays, it is possible to establish kinship not only between parents and their sons and daughters, but also with other relatives, for example, between grandparents and grandchildren. In particular, this last possibility was not available at the times of APM's origins. Indeed, the investigation in the field of genetics itself was influenced by the work of APM. Victor Penchaszadeh is an Argentinian geneticist who was forced into exile in New York during the dictatorship. In 1982, he was visited in that city by Chicha Mariani and Estela de Carlotto, president and vice president of APM. The demand for justice and for finding the appropriated grandchildren led to the finding of the "*grandpaternity index*", a scientific index that measures the probability of an

existing biological link between persons and their grandparents given the absence of the parents (see Penchaszadeh 2012).

Considering the traditional scientific identification methods, the problem was how to prove kinship relationships in the case of the appropriated people (sons and daughters of the disappeared people). The genetic characteristics of the people in question come, obviously, from their biological progenitors; and the latter's genes, in turn, come from their own progenitors (the former's grandparents). Given the absence of the parents, the DNA of the putative grandparents had to be analysed, in order to prove the biological kinship. The principles involved in parenthood tests are extrapolated to the cases in which progenitors are disappeared. In these cases, the genotypes of the disappeared people (the putative parents) must be inferred by means of studying the genotypes of their own parents (the putative grandparents of the appropriated people). It was necessary to modify the mathematical formulations of the probability of maternity/paternity inclusion. Instead of searching the maternity/paternity inclusion, the probability of the inclusion of *grandpaternity* is sought. This is the *grandpaternity index*: the probability, expressed as a percentage, that certain people are indeed the biological grandparents of a person (see Córdoba & Lipko 2013).

How to interpret the techniques developed by genetics in order to prove identity, to determine the presence or the absence of a biological tie? How are their results understood? If current scientific knowledge allows us to assert that every single person can be identified on the basis of their DNA, because it is unique, it is understandable that the notion of identity — so widely invoked regarding restitution — is considered to be linked to the notion of DNA. But the uniqueness of DNA may not be a sufficient criterion on which identity is based. Before evaluating that, let us briefly consider the debate over identity that took place in philosophy during the 20th century.

2. The metaphysical debate over identity

In 20th century analytic metaphysics, a heated debate took place regarding personal identity, however, the first systematic formulation of the problem was made by John Locke in 1690 [1997]. Different problems arise when personal identity is under discussion: synchronic and diachronic identity can be distinguished, as well as quantitative and qualitative identity, among other issues (Olson 2019). But in the most important views of analytic philosophy, the issue of personal identity is the diachronic problem of re-identification over time, i.e., the *persistence question*. The question is identified with the search for the necessary and/or sufficient conditions for a past or future being to be a certain present being, since we are supposed to be the same person throughout different times (Perry 2008).

It is not the purpose of this article to expose the debate about personal identity over time in analytic philosophy, nevertheless, it is worth mentioning that two main conceptions have been proposed: the psychological view and the brute-physical or biological view. According to the psychological view, a psychological relationship — continuity or connectedness of memories or other mental features — makes people themselves, makes a person persist as that person (Olson 2019).

Locke had been a pioneer of the psychological conception, by assessing that personhood relies on having consciousness or instant reflection, and consciousness is what makes a person a “self”. Instant reflection extended backwards becomes memory, and memory is responsible for identity over time. A person is the same person throughout time, because of memory. According to Locke, a person in the past is the same present person if and only if the latter can remember in the present an experience the former had (1690 [1997]). The lockean view received many criticisms, which we will not expose here (for such criticisms, see Córdoba 2017), but the psychological view on identity was recovered and reformulated by different philosophers in the 20th century. For instance, according to some approaches, a present person is the same future person when the latter inherits the former’s mental features — not only memory, but also preferences, the capacity of rational thinking, beliefs and so on. In these cases, it is psychological continuity (which is broader than memory continuity) what is required for persistence. Other philosophers assert that psychological continuity does not guarantee identity, but psychological connectedness — a relationship that can have degrees — does (see Noonan 2003, Parfit 1984, Shoemaker 1999).

According to the brute-physical view, personal identity depends on biological continuity. It is the same body or the same biological organism what makes a person persist as that person (see Olson 2019). Therefore, personal identity relies on the continuity of a human body (Williams 1970, Thomson 1997), or on the continuity of the organism, metabolic and vital organs of the human animal (Olson 1997, Snowdon 1990) (see Noonan 1998, Olson 1997, 2019). According to this view, the persistence conditions of humans are no different from the persistence conditions of non-human animals, and what constitutes identity does not provide a criterion for personhood.

The psychological conception has been criticized for having counterintuitive consequences. Firstly, given that memory presupposes identity, it has been said to be circular. Secondly, if we cannot recall a personal past experience, then we are not the person who had that experience. Thirdly, accepting that identity relies on memory is a problem for transitivity and identity is a transitive relationship. Finally, this view was also criticized on the basis of the imaginary experiment of fission and brain transplant (Olson 2019).

Regarding the biological view, it is asserted that it is closer to certain intuitions,

since people die when their bodies or organisms die. Nonetheless, this view has been criticized invoking the mental experiment of brain transplant and because it does not consider human specificity, since personal identity is simply animal identity (Olson 2019).

By placing identity on a body without consciousness or on an incorporeal consciousness, the two views posit a unique feature of a person or human animal as constitutive of personal identity. Summing up, while in the psychological conception, continuity is developed through memory, in the physical conception it is developed through the continuity of the human body. This is important because the demand for the restitution of the 500 appropriated people during the last Argentinian dictatorship promotes the search for maintaining *memory* and *collective identity*, not only with respect to the biological family, but also to the Argentinian society as a whole. This demand poses new philosophical relevant questions.¹

How can this theoretical debate, built mostly on mental experiments and imaginary scenarios, be linked to the debate over restitution? Whenever the restitution phenomenon is analyzed, the notion of identity emerges. Is it the same debate? In a sense, it is, since appropriation and restitution are opportunities to formulate the persistence question, as it was formulated in the philosophical debate: *How can it be known if a child appropriated during the dictatorship is the same person as a present adult?* That question can be identified with the search for a criterion to reidentify people throughout the passage of time.

3. The political debate over restitution: questioning genetic identity

Why did the notion of identity turn out to be crucial in the debate regarding restitution? From APM's perspective, what was harmed was the children's *identity* as it was robbed and replaced, i.e., violated. Their idea is, nonetheless, that it can be *recovered*. *Restitution* achieves the "restoring" of that peculiar feature of humans and has been made possible thanks to DNA tests and the *grandpaternity* index. Since genetics plays a central role in the effective practice of identifying the children, APM linked identity with *DNA*, *origin* and *blood* in their discourse strategy. Via DNA results, 130 people have been found so far (see <https://www.abuelas.org.ar/>).

Nevertheless, it was criticized that a notion of identity based on genes was established due to APM's demand and the findings based on genetics. It has been criticized that human ties are — or can be — "biologized", that the eminently social character of kinship is replaced by a blood-based link (Villalta 2002; Regueiro 2010, 2013; Quintana 2016). According to Sabina Regueiro (2010), identity cannot be reduced to genetics, and genes are necessary but not sufficient to construct identity. Gabriel

Gatti warns us about the notion of identity involved in the restitution demand and discourse, associated to “old nouns” like ‘family’, ‘origin’ and ‘blood’ (2012, p. 354). The author considers a resistance strategy based on the ideas of biological and genetic inheritance *paradoxical and disturbing*. According to Gatti, the risk of *biologizing* social ties must be denounced (2014). If identity is identified with genetic inheritance, it is due to the fact that a political strategy or tactic becomes an “ontological definition”; it is “*ontologized*” (Gatti 2012). According to other arguments, the ontologization and crystallization result from extrapolating the notion of identity from restitution to other contexts, and can misguide us towards the acceptance of a reductionist perspective on identity and genetic determinism (Córdoba & Lipko 2013).

In our society, it is powerful to state that something is “scientifically proved”, and biological filiation evidenced by DNA tests is no exception. On the one hand, the force these tests bear increases given that they contribute to a fair political claim and the pursuit of justice. The results of the DNA tests have been decisive in the trials. On the other hand, there has been a precise reference to science, acknowledging the help of genetics in APM’s discourse — a very careful discourse though, explicitly affirming that biology does not reduce identity.

All in all, according to those criticisms, biology ends up being *exalted*. A clarification for the exaltation of biological links can be found in Judith Butler’s notion of “performativity” — where she revisits Austin’s (1971) thought — (1990, 1993, 1997a, 1997b), which is widely referred to in current debates regarding identity and identity politics — particularly but not exclusively regarding gender identity. In fact, the notion of performativity is employed by Verónica Tozzi (2012) for the case of restitution. According to that notion, the feature that allows a group to be identified and characterized is produced and re-produced by bodily acts. The “core” or “essence” of an identity is produced by a continued series of acts. So, the way in which people are classified is performative: it is the reproductive power of discourse which produces the phenomena it regulates (Butler 1993).

The discursive reiterations regarding a genetic notion of identity involved in restitution produces a genetic-core identity, produces the community of the “restituted” people, and generates exclusions, since reiterations and classifications always fixate meanings that generate exclusions (Tozzi 2012). Performativity explains subjects and groups productions but also its subversions; what is produced by a series of acts can be destabilized as well (Butler 1990).

In the next sections we will try to go more deeply into the criticisms to genetic identity. We will try to find out which notion of biological identity is *actually* debated. Furthermore, *is there a notion of personal identity based on genetics? Can personal identity depend on biology?* These questions have been absent from the debate so far, and philosophy of biology had not yet intervened in it. So, in 4.1, we will offer a theoretical argument against genetic identity from *philosophy of biology*. In 4.2, we will

change the perspective to a practical one and we will offer a new practical — political — argument against genetic identity: we will argue that genetic identity does not come *exclusively* from discourse reiterations, but it is also *produced* by biotechnologies².

4. Further arguments against a genetic notion of personal identity

4.1. A biological-theoretical argument

In this section, we will claim that philosophy of biology allows us to argue against the idea that personal identity can depend on genetics. The importance of such argument relies on the fact that most of the criticisms against a biological approach to identity are framed in sociological, psychological and political reasons. The debate within philosophy of science has not yet been sufficiently addressed.

The thesis that personal identity consists in DNA presupposes another, more general thesis of pure biological content: the idea that DNA — or genes — is the fundamental or sufficient cause of an organism’s development. Some considerations in contemporary biology cast doubts on that thesis. We will argue that if DNA cannot be ascribed a sufficient condition role in living organisms, then it can hardly be ascribed a sufficient condition role for personal identity either.

There have been many ground-breaking developments in biological sciences that concerned the genetic material of organisms during the 20th century, also known as “the century of the gene” (Fox Keller, 2000). The gene has been dignified as *the* unit of heredity and *the* unit of information, with the corresponding preeminence in biological investigation and explanation. But contemporary biology offers the rationale to undermine or moderate such conception of the role of the genetic material in living beings (see Córdoba 2021).

In the first place, there are some genetic conditions to argue against the idea that one single DNA and one single person correspond to each other in a one-to-one relationship. Secondly, we will briefly explain some key regulatory processes that contribute to undermining the alleged primacy of genetic factors by showing to what extent do gene products depend upon extra-genetic factors — or, to put it differently, that DNA is far from being a sufficient determining cause of immediate gene products.

To begin with, the case of monozygotic (MZ) twins is a typical example often cited to show that two different persons may have the same DNA. Briefly, MZ twins are originated when a single embryo at the two-cell stage up to 7 days of gestation (Singh; Murphy & O’Reilly 2002) suffers a separation, giving rise to two embryos with identical genotypes but independent developments and that may or may not

share the same placenta (Machin 2009). This case offers enough reason to reject the idea that one DNA corresponds to one and only person. If we also think about artificial clones in animals, as Dolly the sheep's case, then it becomes quite clear that it is possible for two (or more) individuals (including human beings) to share all their genetic material and still be considered as different individuals.

Another case that draws our attention to the relationship between individuals and DNA, but the other way around, is mosaicism. This genetic disorder refers to the presence of more than one genetically distinct cell line in a single organism, originated from one single zygote (Youssoufian & Pyeritz 2002; Johnson et al. 2020). If the different genetic lines are originated from two or more different zygotes, it is referred to as chimerism, being called microchimerism when there is a minor cell population (less than 1%) of different genetic line (Johnson et al. 2020). Chimerism not only can be naturally originated — as in fertilization of two oocytes by two spermatozoa and the resulting fusion of both embryos or as in transplacental passage of blood between mother and child —, but also artificially after a blood transfusion or bone marrow transplantation (Johnson et al. 2020). These phenomena constitute a reason to reject the idea that a single person corresponds to a single DNA.

All these cases illustrate that one person and one DNA do not connect *necessarily* with each other in a one-to-one relationship. Then, we can no longer ground personal identity, at least *exclusively*, on DNA, since, for example, for those people with the aforementioned genetic conditions, the forensic identification based on human remains by means of genetic tests would be highly hindered (see Sanz-Piña; Santurtún & Zarrabeitia 2019; Walker 2008). These situations greatly challenge the basis of forensic genetics, which is based on the presupposition that each person possesses a unique DNA.

Regarding a second reason to reject a genetic concept of personal identity, it is known that genetic regulation in eukaryotes is very complex, involving transcriptional activation/inhibition and several editing and splicing processes occurring at different stages of protein or RNA synthesis. Alternative splicing is often cited in the literature as having important consequences for our understanding of gene action. After transcription and before translation, a primary transcript (RNA) undergoes maturation, a process in which the introns (non-coding regions) are cut out and the exons (coding regions) are spliced together. Now, the splicing of the various exons in a transcript can take place in different ways (different orderings), so, more than one mature mRNA results from one single primary transcript. The polypeptide sequence resulting from splicing variants of a primary transcript will be, therefore, also different. The DSCAM gene of *Drosophila* is known to allow for 38,016 variants (Neves et al. 2004). Such molecular diversity cannot be attributed to the gene's DNA sequence alone, nor does the DNA sequence alone determine which splice variant will be produced in a particular cell at a particular time. Rather, that depends on the

splicing factors assembled in the complex spliceosome and to the availability of its components (Mabon & Misteli 2005, see Córdoba 2021).

Alternative splicing, as well as other co- and post-transcriptional processes, are cited by philosophers Paul Griffiths and Karola Stotz (2013) in supporting the thesis of genetic underdetermination, i.e., the idea that gene products are not fully determined by DNA sequences, and the thesis of distributed causal specificity, i.e., the idea that the various factors that contribute to a gene product share causal specificity, respectively. On the other hand, from a philosophical point of view, Griffiths and Stotz address an interesting objection according to which, to the extent that the regulatory factors involved in alternative splicing (and other processes) are, themselves, gene products, then causal responsibility can ultimately be traced back to DNA, thereby vindicating its causal primacy (see Córdoba 2021). They respond to this objection by drawing attention to the role of the environment in gene expression and regulation by epigenetics, parental effects and developmental plasticity, among others.

The term “epigenetics” was coined during the decade of 1940 in the context of embryological research in order to refer to the different developmental pathways a cell might take during differentiation, according to the presence or absence of particular genes (Deichmann 2016; Greally 2018). However, at present it is mostly defined as the chromatin and DNA modifications that act in the context of chromatin without changing the base sequence. In this sense, “epigenetics” alludes to “a higher level of information that exists beyond the genome and instructs genes how and when to switch on and off” (Greally 2018, p. 2). The referred molecular mechanisms, which actually are no other than transcription regulators, mainly include chemical modifications of DNA (methylation) or of histone proteins around DNA, and non-coding RNAs (Griffiths & Stotz 2013).

Some authors consider that the term “epigenetics” has become so fashionable in the scientific literature that sometimes it is misused to pronounce excessive claims in relation to experimental evidence (see Deichmann 2016; Greally 2018). However, with the precaution of not falling into this “epigenetics hype”, as some have called it³, it is quite clear today that the mentioned molecular mechanisms affect phenotype. We must refer again to the example of MZ twins. Most twin pairs show phenotypic discordance, i.e., different susceptibility to disease or different anthropomorphic features, despite the fact that they share a common genotype. These observations are attributed to multiple possible factors, but epigenetic modifications through time constitute a very important one.

In a recent study based on an unprecedented sampling of 80 pairs of MZ twins, Mario Fraga et al. (2005) found that in these patients, the patterns of epigenetic modifications (DNA methylation and histones modifications) diverge during their lifetime. The authors claim that this could be explained by the influence of both internal and external factors. The internal ones are related to the possibility that “small defects

in transmitting epigenetic information through successive cell divisions, or maintaining it in differentiated cells, accumulate in a process that could be considered an “epigenetic drift” associated with the aging process” (2005, p. 10609). External factors include diet, smoking and physical activity. In fact, although not specifically for the case of MZ twins, the chemical modification of chromatin by metabolic networks and its possible modifiability through dietary and pharmacological interventions has been recently reviewed (see Dai; Ramesh & Locasale 2020).

The very deep mechanisms of MZ twin phenotypic divergence are still under investigation. Yet, these results highlight the importance of continuing research in the epigenetic agenda, especially in the field of medical applications. In relation to that, it is notable that in medical services, MZ twins are often designated as dizygotic twins because of the expectation that they must be phenotypically identical, and this can have adverse results — especially in the case of transplantation (Machin 2009).

In addition, parental effects, though not conceptually univocal (see Badyaev & Uller 2009) can be roughly defined as influences of parental phenotypes on offspring phenotypes, an influence that cannot be accounted for in terms of correlation between their genotypes. Such influence can be exerted via nest site selection or oviposition, nutritional provisioning, temperature exposure, parental care, among others, and have either anticipatory (to expected environmental conditions) or diversifying (increase of variation) effects (Reddon 2012). Thus, for example, Norway rat mothers differ in the degree to which they lick and groom their pups the first week after post-parturition. The licking and grooming a pup receives has considerable and lifelong effects on their behavioral responses to stress, so pups can be more or less dominant, social, or aggressive, along with corresponding physiological differences (Cameron et al. 2005). Parental effects show the degree of developmental plasticity that developing organisms exhibit in response to different environmental conditions that is, again, not reducible or attributable to genetic factors (see Córdoba 2021).

It is beyond the scope of this paper to offer a complete picture of the multiple developments that have implications for DNA's ontological and epistemological status even though a lot more could be said. However, our aim is to discuss the plausibility of a genetic conception of personal identity. MZ twins, mosaicism and chimerism, regulation of gene expression mediated by activation/inhibition factors and alternative splicing, the impact of the environment on gene expression by epigenetics and parental effects, and developmental plasticity can be alleged to illustrate the change our conceptualization of DNA is undergoing at present times, so that shall suffice. Moreover, a genetic conception of personal identity can still be objected from a different angle, as we will discuss in the following section.

4.2. Practical — political — argument

While we can turn to philosophy of biology to say that a genetically shaped notion of personal identity is misguided, the criticisms referred to in section 3 are accurate to some extent. The fact that biology cannot reduce identity is not sufficient reason for that notion not to be established in our society. Thus, further arguments should be put forward in order to call that notion into question.

In this section we will propose a new practical — political — argument. We claim that a biological notion of personal identity emerges from the power of *biotechnologies*, which produces genetic identity as an *actual effect*. And that notion of identity must be criticized given the risks and exclusions it implies. Such risks and exclusions can be understood from a performative perspective.

We have argued that there is a crystallization of APM's strategy, consisting in fixating the link between genetics and identity, by turning that link into the very foundation of identity (Córdoba & Lipko 2013). That is the idea of reification, i.e., that there is an *ontologization* of DNA as identity, in Gatti's words (2012). But the phenomenon of restitution goes further than that; in this case, the sphere of theoretical knowledge and the sphere of technology become independent, one from the other. According to our viewpoint, identity is *produced* by means of biopower technologies (see Córdoba 2019 and 2020) while the techniques involved become independent from the knowledge grounding them. That they become independent from each other is evident if we consider the practical consequences of such techniques, i.e., the constitution of a *biological identity*, which, in turn, consists in an independent sphere itself. The identity produced in such way is not a mere crystallization in fields broader than the proper field of science or a mere result from the reproductive character of discourse. That kind of identity begins to exist and has real effects that go far beyond the ontologization of a pseudoscientific notion.

A genetic identity is manufactured *in spite of the fact that* biology seriously considered cannot theoretically ground identity. So, by undermining the latter — the scientifically grounded notion —, we are not undermining the former — the genetic notion. How is identity produced by biotechnologies? In the case of restitution, identity *comes to exist* as a product, *because of* and *by means of* DNA results and their interpretation by the grandpaternity index. The identification technique "makes" individuals' identity, defines them, and thereafter establishes a whole new state of things: new kinships or ties (relationships, families) that are legitimate and recognizable, legal/illegal status, true/fake parenthoods and hence justice and the restoration of a "truth".

It is the *praxis* of science, in a *sphere that operates with freedom from its theoretical bases*, which creates identity and produces a brand-new "world" in which identity is tied to DNA. A brand-new world in which, on the one hand, a cultural tradition —

in which the nuclear, biological family is upheld — is reinforced, but, on the other hand, new and extraordinary consequences arise. Such consequences, as we have seen, are new laws and a sort of definition of identity tied to family and inheritance as a feature that governments *must take care of*. Identity produced by genetics techniques (and not “discovered” by science), is a real feature of people that must be protected — particularly, the identity of children. Hence, identity violations must be punished accordingly. It is regarding identity as a human right (a *legal fact*), where science played a central role. So, genetics not only played a fundamental, unique role as regards the sentences to the appropriators; it also made it possible to establish new rights, new human features that must be defended. New policies also legitimate scientific practices in broader areas, in order to solve crimes and to identify people with different purposes.

The strength of a genetic conception of identity is not based on the scientific foundation of the theoretical knowledge behind the DNA tests, nor exclusively in discourse reiterations; it is based on the productive effects of the very technological practices along with discourse reiterations. DNA results do not unravel what is biological or natural in identity, they *produce* that natural-biological core of identity.

This way of conceiving *science* and *technology*, their imbrication and separation, and also the social, world-order productive effects they have, reminds us of Michel Foucault’s (1980) suggestion of leaving aside the *science-ideology* question and instead, think about the *truth-power* problem. As subjects come to exist as effects, identity is also produced in the case of restitution. This production takes place thanks to scientific outcomes. DNA tests make restitution and the restoration of a truth possible; consequently, the members of the Armed Forces were convicted on appropriation charges. Science is, of course, behind that practice, but the practice itself has the power of creating that new state of things. In this manner, the theoretical problem of the “truth” of the scientific statements regarding the role of the genes in organisms’ development is overcome by the effects of genetic practices — in other words, the theoretical problem becomes a practical question. The genetic identity so produced is out there, it is *real*: it has several effects in different human spheres. In fact, the leaps from the scientific truth to the scientific proof and, finally, to legal proof are remarkable.

By accepting that, the task of philosophy of science can be enriched. Philosophy of science must unmask the absence of scientific foundations of some alleged scientifically grounded notions, along with an analysis of the products of biotechnologies, since they have such momentous implications over people’s lives. It can address the way in which some techniques with significant social, legal and political impact related to scientific knowledge, gain independence from it.

Some criticisms are based on the justified infamy of genetics (see Bergel 2012). Historically, it has been clearly established that genetics and genetic technologies

have been used with unethical purposes (by means of racism and eugenics, for instance). It has not been thoroughly discussed which *productive, creative* effects genetics has. The case of restitution, and the achievement of justice by means of restitution lead us to rethink science and technology as productive practices.

Let us finally consider why, from the view here adopted, genetic identity must be questioned. Genetic identity and the exaltation of biology pose certain risks. Those risks provide reason enough to reject a genetic conception of personal identity — or at least, to insist on a radical questioning of it. Since, according to Butler’s notion of performativity, every reiteration fixates meanings that generate exclusions, some peculiar kinships that have no chance of being anchored on genetic-blood-ties, can be excluded from the legitimacy of family relations. The genetically produced identity — with the consequence of the exaltation of filiation and kinship marked by “blood”, by DNA — excludes the viability and relativizes the legitimacy of *other kinds of families*. That is noteworthy, given that in the same socio-political Argentinian context, several laws were recently approved, which recognize other kinds of families (not based on biological ties). These laws recognize equal marriage (Law 26618-1054/2010), the widening of the access to assisted reproduction techniques (Law 26862/2013), and the law of gender identity (Law 26743/2012). These achievements are in apparent conflict with biology⁴ and the exaltation of biological human features.

5. Defending the political strategy while rejecting the genetic notion: The limits of a “critical defense”

Is it possible to give reasons to support APM’s strategy but being alert regarding the theoretical mistake of thinking that genetics can exhaust identity, and the productive role of biotechnologies? We state it is possible, because some situations demand us to assume political responsibilities. Our position about the phenomenon of restitution cannot be indifferent. In the case of the Argentinian dictatorship, the histories of the restituted grandchildren are not only individual, but the reflection of a collective-political struggle against the devastating effects of the dictatorship.

APM’s search must be not only defended, but also actively supported. And philosophy can offer arguments in favor of their political and justice demand. Nevertheless, from the arguments here presented, it may seem that philosophical considerations can only contribute to undermining it. However, we claim that philosophy can support their political and justice demand even considering the previous critical arguments. The reasons why APM’s quest must be defended and supported are, in the first place, political. APM’s work, even though considered an example of political fight and demand of justice (it suffices to notice how every grandchild’s restitution is celebrated all around the world) was not always equally recognized. Therefore, the

acceptance of APM's fight should not be taken for granted. Since APM's work was not always fairly accepted, certain administrations and political parties can relativize or even hinder their achievements. The criticisms to an idea of identity rooted in genetics can be read as a criticism to the restitution process itself. A criticism produced in academic fields should be rigorous enough not to support denialist discourses.

Once democracy was restored in Argentina, APM's fight for Human Rights and its demand for justice — exemplified in the restitution process — can be considered unquestionable. Nevertheless, that cannot be taken for granted. Between 2015 and 2019, within the framework of a right-wing ruling coalition headed by Mauricio Macri, the denialism of the crimes of the last dictatorship proliferated in voices and texts of prominent members of the national administration. Trying to denigrate the struggle of APM, human rights were shamelessly described by them as a “gig”. The discourse of Macri's administration referred to the “complete truth”, the “turning of a page” and pretended to disguise denialism behind the expression of a desire for “reconciliation” and “leaving the past behind”. That discourse aimed at delegitimizing the struggle for human rights, while at the same time it justified the actions of the terrorist State, characterized as a reaction against the “Sovietization” of the country. And that took place when a vindication of the dictatorship seemed utterly impossible.

There are more reasons that do not leave room for doubts pertaining to the support APM deserves. Appropriation of children is a *crime against humanity*, and — as we have seen — several rights to protect children were established thanks to APM's demands. In addition, on the basis of the DNA results, a scientific test became a *legal proof*. Besides these political and legal reasons, there are as many subjective reasons to defend APM's search as there were appropriated persons. 130 grandchildren, whose lives completely changed and who could re-construct the ties with the families from whom they were robbed, were effectively restituted. Their personal reasons can be found and appreciated in several testimonies.

If philosophy can give supporting reasons to defend a political fight, but keeping an eye out for the mistakes and risks denounced by the criticisms, it should also remain alert regarding the very criticisms it elaborates. Why is that? Even though criticisms are appropriate, they must be carefully considered and critically evaluated, since concluding that there is not a biologically grounded notion of identity can, as an effect, wipe out APM's achievements and conquests. Hence, making this scenario even more complex, there is a conflict between APM's political success and the questioning of a genetic notion of identity. Following a performative perspective, the reiterations of criticisms can also produce their own exclusions.

As we have seen, restitution involves political and legal achievements that imply certain ideas concerning identity correctly called into question by philosophy. From the very performative perspective adopted to question biological-genetic conceptualizations of personal identity, it can also be discussed if the criticisms do not produce

some dangerous exclusions and have hazardous consequences themselves. Questioning the genetic notion can wipe out APM's political success, particularly, relativizing or arousing suspicion about the *datum* that works as a legal proof on the basis of DNA tests.

So, the reiterations of criticisms and arguments against a supposedly scientifically grounded notion of personal identity have their own consequences and derivations. Such questionings can crystalize themselves, detach themselves from their philosophical academic realm and produce their own exclusions. A rigorous criticism to a particular notion of personal identity, developed for a particular case, can be displaced and end up questioning APM's work and can be supported on the basis of other political interests, serving politically and socially dangerous goals.

To criticize an idea of personal identity based on genes for its conservative "scent", potentially negative consequences or the exclusion of other kinds of families, however accurate, could have negative displacements. By iterations, the criticisms can become independent from the original questioning, reach APM's work, relativize the biological link and, hence, relativize DNA results as legal proofs. Philosophy should pay attention to that as well.

6. Concluding remarks

We offered two arguments against a genetic notion of personal identity, but also warned against the very questionings and criticisms. We must be mindful of every single nuance of the criticisms; and how to understand identity requires further philosophical discussion as well. We think it is not accurate searching for a complete definition of identity and pretending it is universal and absolute, valid in every single context — as the traditional metaphysical debate aspired to. Nevertheless, some consequences for the traditional debate can be established.

If we accept the idea that biotechnologies have productive effects and therefore produce identity, we can also affirm that the produced feature is not a *neutral fact*; it is something that carries a proof. In this sense, identity tied to DNA is not a fact that can be distinguished from the legal proof and its political meaning. In addition, if we accept that biological identity is a produced feature, the discussion between essentialism vs. anti-essentialism — which underlies the debate over personal identity — makes no sense hereafter. The dichotomy essentialism - anti-essentialism (and with it, the traditional dispute over nature and culture, which underlies the debate over restitution) is overcome: there is no need to fight the risks of an essentialist position regarding identity. By accepting the idea that genetic identity is produced, there is no such contrast between what is natural or biological in identity — articulated by scientific knowledge — and what is not. That would lead to re-writing and

re-formulating the entire debate, since the oppositions between a biological and a psychological view, and between a biological or psychological view and a relational (social-narrative) conception have framed the traditional debate on personal identity in analytic metaphysics and beyond (Olson 2019).

In current debates, it can be assessed that some positions in favor of extending rights tend to abandon the notion of identity, since identity leads to essentialism, and essentialism leads to violence (especially when identity is invoked by governments, by certain nationalisms and certain political ideologies). On the other hand, it is common to ascribe the idea that identity must be overcome to postmodernism. Therefore, for different reasons, it is extended that identity usually relies on conservative basis, so it is a conservative notion and contains a germ of violence (especially, when we think of violence perpetrated by States). But the phenomenon of restitution challenges those ideas. According to what we argued here, if identity is manufactured as an effect, the objective of tracking what is *natural* in identity or searching for its hidden essence, makes no sense. If we accept that, we can celebrate the closure of the traditional discussion over identity — which has led to paradoxes, puzzles and aporias —, and brand-new questions can emerge. In the first place, we can “relieve” science and stop asking it to give us an ontological definition of identity. But we can, on the other hand, ascribe to science, especially in its relation to biotechnology, a precise political role. In the case here analyzed, individuals’ produced identity is not a mere fact, but a *valued feature* that must be protected.

Our proposal requires a new perspective on science and technology. It does not require paying attention exclusively to internal foundations of biology nor consider the external effects of science (or of scientific or pseudo-scientific discourses). Philosophy of science can make a political difference by showing the reticular relationships that science and technology have with power. Philosophy of science can assume an important role regarding the scopes and problems of a biological notion of identity. What does that notion allow us to *preserve*? What does it allow us to *exclude*? And who reaps the benefits from its exaltation or condemnation?

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Notes

¹These philosophical questions cannot be addressed here, since it is beyond the scope of this paper. Nonetheless, some issues can be mentioned. On the one hand, identity when restituted by a physical feature of humans cannot hinder the importance of memory, and not only the individual's memory (as the one invoked on the identity philosophical debate), but also *collective* memory. The notion of collective memory — so important to the Argentinian recent history — is linked to collective identity as well. That emphasizes the fact that the problem of identity restitution is not just a personal (private) issue, but a political (public) one. On the other hand, it would be interesting to ponder on the fact that collective identity, which results from the restitution phenomenon, contains the traumatic reference of the appropriation crime, not obviating the dictatorship period.

²We offered different arguments against genetic identity in Córdoba 2021. The new arguments here proposed tend to continue that task.

³"Epigenetics Hype" here is used for an extended version of epigenetics, i.e., the far-reaching, revolutionary claims of having discovered entirely new mechanisms of heredity and evolution which are supposed to replace older concepts (Deichmann 2016, p.252).

⁴Those rights are in apparent conflict with biology, but assistant reproductive techniques and the surgical and hormonal treatments in order to modify bodies according to gender identity also rely on biology (on its definitions, its comprehension regarding sex; and the techniques involved in assisted reproduction technology are based on biological knowledge). We cannot discuss that here, but that gives us more reasons to state the necessity for philosophy of science to get involved in these debates (see Córdoba 2019 and 2020).

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