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SCIENCE, IDENTITY AND THE LAW
INTERSECTING CONCEPTUALIZATION AND OPERATIONALIZATION OF RACE AND ETHNICITY

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L'identité contre la science ?
La science au service de l'identité ?

Sociétés plurielles

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Science, identity and the law

Intersecting conceptualization and operationalization of race and ethnicity

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The comparative legal scholar authors, working on a broad project mapping how law conceptualizes and operationalizes race, ethnicity and nationality, provide an assessment of the triadic relationship between law, identity (-making and -claims recognition) and science. Our inquiry is triggered by the transformative changes in the past years in how the meaning of the terms of identity are assigned and

conceptualized in social sciences and humanities, as well as in politics and law.[1] Curiously, there is a lack of linguistic and conceptual resources for thinking about racial identity. This is particularly surprising in the field of law, which habitually operates with the concepts of race, ethnicity, and nationality when setting forth standards for the recognition of collective rights or protection from discrimination, establishing criteria for asylum, or labeling actions as genocide, without actually providing definitions for these groups or of membership criteria within these legal constructs.

The paper begins by providing an overview of the obstacles, challenges and controversies in the legal institutionalization and operationalization. The second part will turn to the discussion of how "objective" criteria, data and constructions provided by science translate into the legal discourse. First, we will map out how our grand project design aims to encompass historical and contemporary approaches, and point to the peculiarities of re-biologization of ethno-racial conceptualization and the reemergence of the marriage of geography and biogenetic conceptualization.

1. Conceptualizing and operationalizing race ethnicity and nationality: the problem and the framework

Analyzing political and legal measures that serve to operationalize race, ethnicity or nationality is a blooming field of scholarship.[2] It brings together legal, historical, and political scholars[3]. In 2018 a research group involving over 50 scholars from various disciplines on "Identity, Race and Ethnicity in Constitutional Law", was convened under the auspices of the International Association of Constitutional Law.[4] The aim was to create a forum for academics working on different fields of law and other areas of social sciences to create novel and illuminating intersections for understanding this multifaceted and complex phenomenon. The challenge and goal are to bridge and cross-fertilize discourses and narratives on race (in the US), ethnicity (in various jurisdictions), the continental European framework of

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1. Pap, 2017 and Brubaker, 2015.

2. For a detailed introduction to our project see Pap, 2021.

3. See for example Dobos, 2020; Sansum & Dobos, 2020, p. 10; Smith, 2020; Stergar & Scheer, 2018.

4. The International Association of Constitutional Law, URL: https://www.iacl-aidc.org/index.php/en/research/research-groups/identity-race-and-ethnicity-in-constitutional-law.

(collective claim-based) national minority rights, and the conceptual and policy toolkit of caste and aboriginal/indigenous law—in order to assess how substantive or procedural law encapsulates identity.

1.1. Race, ethnicity, identity and the law

The starting point of the assessment is the noted paradox that most of the time, legal texts refrain from providing normative definitions and classifications pertaining to race and ethnicity, thus conceptualization needs to be deciphered meticulously from technical and operationalizing measures and procedures. The problem goes beyond the general dilemma pertaining to law which is as follows: it is the basic tenet of law that particular legal regimes and provisions are part of an integral and unambiguous system, yet legislative procedures are end-points of a long chain of political compromises. When it comes to issues concerning race and ethnicity, there are additional heated intellectual, social, cultural and political debates and struggles, situated in the seething cauldron of multifaceted personal and collective identity formations and power relations. At the end, Brubaker[5] argues, just like with gender, the color line may be sharp and rigidly policed in theory, but is often blurred and porous in practice. He points out that even the core questions are multilayered: do race and ethnicity have a fixed meaning susceptible to verification, or are these categories expressive and affiliative through self-discovery and public disclosure? Even if these identities have supra-individual elements such as biogenetic and trans-generational history, genealogical facts of ancestry, social facts of classification systems and categorization practices, historical facts of enslavement, oppression, and discrimination.

But let us return to legal frameworks. Protective measures for racial, ethnic, or national communities can be targeting a number of things, such as: socioeconomic equality, de facto freedom of religion, the protection of potential pogrom victims and the prevention of brutal ethnic conflicts, decreasing cultural conflicts between the majority and "genuine" minority or immigrant groups, combating racial segregation or apartheid, or race-based affirmative measures of compensatory, remedial, or transitional justice. In line with this, laws protecting minorities may take several forms, ranging from affirmative action and social protection measures, through declarations of religious and political freedom, to setting forth cultural or political autonomy, or controlling political extremists.

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5. Brubaker, 2015; 2016.

The context-dependent meaning of minority protection may also refer to a widely diverse set of policies such as equal protection (non-discrimination), participatory identity politics (the political participation of identity-based groups in political decision-making), cultural identity politics (the recognition of identity-based groups in cultural decision-making by the State), the protection of historically rooted identity-based sensitivity (the criminalization of hate speech, holocaust denial, etc.), affirmative action, special constitutional constructions form-fitted for the needs of indigenous populations, policies recognizing claims which mirror the State's ethnic kin's diaspora claims abroad, the right to traditional, pre-colonization life, or simply measures designed to maintain international security.

Conceptualization and operationalization come up in two dimensions: definitions and classifications pertaining to the groups, and how membership criteria are established in these communities.

1.1.1. Conceptualizing communities

The conceptualization of communities to be targeted by legal regimes takes place in a climate of ambiguity, sensitivity and suspicion. The very terms are used in vastly differing ways in academic literature, as well as in legal and administrative documents, depending on the social and geographic context. For example, "race" is used in reference to quite a different set of human conditions in the US as in continental Europe. A controversial category, it is generally not considered to be a fruitful analytical concept in the social sciences, where it is widely understood to be a social construct rather than a biological trait (in the biological sense, the entirety of humanity constitutes one single race) without a theoretically or politically uniform definition.[6]

Race-based international and domestic legal instruments identify race with the apprehension of physical appearance, and put perception and external classifications in the center when prohibiting discrimination, or violence on racial grounds. In this, it is rarely distinguished from *ethnicity*, and the two terms are often used interchangeably by lawmakers (and drafters of international documents) and, most of all, judicial bodies. For example, under Article 1 of the 1965 International Convention on the Elimination of All Forms of Racial Discrimination: "the term 'racial discrimination' shall mean any distinction, exclusion, restriction or prefe-

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6. See TAJFEL, 1981.

rence based on race, colour, descent, or national or ethnic origin...". Despite academic interest and insistence in differentiating between the two concepts, legal formulations seem to be incognizant, and even appear to be unobservant and indifferent concerning a potential difference between the two terms.[7]

"Ethnic" communities are referred to in an even more complex environment. The international legal terminology habitually differentiates between "national" and "ethnic" minorities on the grounds that the latter, unlike the former, do not have nation states as national homelands (Hannum 2000). In this way, ethnic minorities are a sort of hybrid category, blending, and often mirroring, the claims made by racial and national groups.

One of the most widely cited legal definitions for race and ethnicity comes from the opinion of Lord Frazer of the House of Lords in the Mandla v Dowell Lee-ruling, which concerned whether Sikhs were a distinct racial group under the Race Relations Act:

> For a group to constitute an ethnic [sic!—ALP] group [...] it must, [...] regard itself, and be regarded by others, as a distinct community by virtue of certain characteristics. Some of these characteristics are essential; others are not essential but one or more of them will commonly be found and will help to distinguish the group from the surrounding community. [...] (1) a long-shared history, of which the group is conscious as distinguishing it from other groups, and the memory of which it keeps alive; (2) a cultural tradition of its own, including family and social customs and manners, often but not necessarily associated with religious observance. [...] (3) either

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7. In July 18, 1950. The United Nations Educational, Scientific and Cultural Organization (UNESCO) issued a 54 page long document on "The Race Question". The first part deals with the scientific status of human population variation and race (Sec. 1-4, 7), outlining that differences in physical variation are largely due to various genetic factors arising from divergent biological histories, adding that variations distinguishing populations on the basis of certain genetic considerations can lead to three classifications of race: "Mongoliod, Negriod, Caucasoid". The second addresses how people have tended mistakenly use the term race (Sec. 4-5). The third part is about the influence of environmental and innate factors on human difference (Sec. 8-13) and raise concerns about using intelligence as a way of classifying human populations into groups or explaining differences between groups (e.g., ethnic or cultural). The fourth part deals with race as myth (Sec. 14), arguing that race is not a biological phenomenon but rather largely socially constructed. "The Race Question", although the first of its kind from the international community, and followed by several subsequent similar statements [...] received notable criticism. See KERSTEN, 2014.

a common geographical origin, or descent from a small number of common ancestors; (4) a common language, not necessarily peculiar to the group; (5) a common literature peculiar to the group; (6) a common religion different from that of neighbouring groups or from the general community surrounding it; (7) being a minority or being an oppressed or a dominant group within a larger community [...]" Using these criteria, he held that Sikhs "are a group defined by a reference to ethnic origins for the purpose of the [Race relations!] Act of 1976, although they are not biologically distinguishable from the other peoples living in the Punjab.

The Permanent Court of International Justice held in the Case of Greco-Bulgarian "Communities", that a minority community is: "a group of persons living in a given country or locality, having a race, religion, language and traditions of their own, and united by the identity of such race, religion, language and traditions in a sentiment of solidarity, with a view to preserving their traditions, maintaining their form of worship, securing the instruction and upbringing of their children in accordance with the spirit and traditions of their race and mutually assisting one another." [8]

We can argue that if we want to grasp the substance of these definitions in the racial and ethnic minority concept, there is one common element which is the protection from maltreatment: discrimination, hate crimes, hate speech, physical violence. Reflecting an anti-discrimination logic, the groups need to be defined by following the perpetrators' method: basing the definition of the group on the perception of either biologically determined characteristics or cultural attributes.

In a sense, however, ethnic minorities are multifaceted groups. While many of their claims are grounded in the anti-discrimination rhetoric employed by racial minorities, some "ethnically defined" groups (such as the Roma) may also have cultural claims (and protections) that national minorities would make. The international legal terminology habitually differentiates between the two groups on the grounds that ethnic minorities are different from national minorities in the sense that they do not have nation states as national homelands. [9] In this way, ethnic minorities are a sort of hybrid categorization, blending and, often mirroring, the claims made by racial and national groups.

The probably most important international document on national minorities, the 1995 Council of Europe Framework Convention for the Protection of

8. Permanent Court of International Justice, Advisory Opinion, *Greco-Bulgarian "Communities"* Ser. B. No.17, p.16.

9. See for example HANNUM, 2001.

National Minorities, also fails to provide a definition for its targets. A relevant definition, also endorsed by the European Parliament's 2005 resolution on the protection of minorities and anti-discrimination policies in an enlarged Europe, is provided by Article 1 of Recommendation 1201 (1993) of the Parliamentary Assembly of the Council of Europe on an additional protocol on the rights of national minorities to the European Convention on Human Rights:[10]

> "national minority" refers to a group of persons in a state who: reside on the territory of that state and are citizens thereof; maintain longstanding, firm and lasting ties with that state; display distinctive ethnic, cultural, religious or linguistic characteristics; are sufficiently representative, although smaller in number than the rest of the population of that state or of a region of that state; are motivated by a concern to preserve together that which constitutes their common identity, including their culture, their traditions, their religion or their language.

When it comes to defining *national minorities*, the important feature is that these groups make claims for collective rights, bypass the anti-discriminatory logic and seek recognition of cultural and political rights, particularly autonomy or the toleration of various cultural practices that differ from the majority's, which often require formal exceptions from generally applicable norms and regulations. In this case, we are dealing with claims for preferential treatment. According to Will Kymlicka, cultural minorities can be divided into two kinds, nations and ethnicities. The former is a historical community, more or less institutionally complete, occupying a given territory or homeland, sharing a distinct language or culture, the latter is a group with common cultural origins, but whose members do not constitute an institutionally complete society concentrated in one territory.[11]

1.1.2. Conceptualizing membership in communities

We have shown how concerning conceptualization and operationalization, international law fails to provide a transparent, straightforward definition or direction for ethno-racial groups.

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10. Parliamentary Assembly, 1993, URL: http://www.assembly.coe.int/Main. asp?link=http://www.assembly.coe.int/Documents/AdoptedText/ta93/erec1201. htm-1.

11. Young, 1997, p. 49.

As we will see, conceptualizing and operationalizing membership is even less unambiguous. Ethno-national identity can be defined in several ways: (i) through self-identification; (ii) by other members or elected, appointed representatives of the community (leaving aside legitimacy-, or ontological questions regarding the authenticity or genuineness of these actors); (iii) through classification by the perception of outsiders; (iv) by outsiders but using "objective" criteria; (v) and by using proxies such as names, residence, etc. Before turning to how science as an objective criterion is used in conceptualization, let us briefly review the other scenarios.

Legal regimes will differ whether it concerns a broad set of services available for members of indigenous communities, political rights for national minorities, or affirmative action measures for ethno-racial minorities. When it comes to measures protecting victimization in hate crimes or discrimination, legal regimes mostly rely on the self-assessment of the victims in regards of their (actual or presumed) membership in the protected groups, although in asylum law or war crime cases (where the consequences of such classifications are particularly grave), group membership is often up for rigorous scrutiny. Likewise, for regimes protecting the freedom to exercise religious identity, even though faith is a deeply personal, subjective attribute, judicial bodies often dwell into scrutinizing the sincerity of religious claims or the relevance of a religious practice.

Thus, in regards of *operationalization strategies:* for anti-discrimination measures, subjective elements for identification with the protected group are irrelevant, and external perceptions should serve as the basis for classification. Policies implementing this anti-discrimination principle may rely on a number of markers: skin color, citizenship, place of birth, country of origin, language (mother tongue, language used), name, color, customs (like diet or clothing), religion, parents' origin, or even eating habits. Defining membership criteria come up in a completely different way when group formation is based on claims for different kinds of preferences and privileges. In this case, subjective identification with the group is an essential requirement, but the legal frameworks may establish a set of objective criteria that needs to be met besides. In the context of drafting affirmative action and ethnicity-based social inclusion policies, external perception, self-declaration, and anonymized data collection may be varied and combined.

Contemporary national legal systems will nevertheless generally usually refrain from providing legal or administrative definitions for membership criteria in ethno-racial communities. The European model for national minorities habitually refuses to create strict administrative definitions for membership. In most cases, a formalized self-declaration suffices for eligibility for collective rights. It

is a rare exception to institute objective requirements, such as proven ancestry (by some sort of official documents) or the proven knowledge of the minority language. Curiously, States are more reluctant to define membership criteria for domestic minority groups than for the titular majority population—a practice often followed in legislation implementing ethnicized concepts for external dual citizenship or status law-like provisions targeting the diaspora.[12]

In the US, critical race theory brought the abandonment of objective, usually judicially formulated[13] systems of racial classifications and made racial self-identification the dominant approach. For example, in 2007 the US Equal Employment Opportunity Commission, which requires employers with more than 100 employees to collect and report racial composition, changed to self-identification from third party classification, which was formerly based on visual survey and categorization assigned based on the employers' perception.

Still, countless doctrinal and practical issues arise. Consider for example census debates: in the US the multiracial category movement went beyond academic circles into the spheres of political mobilization.[14] Challenging census identity categories is also a recurring theme in post-Yugoslav debates, involving harsh census election campaigns, ethno-national boycotts by ethnic entrepreneurs and the phenomenon of protest-identification as "Jedi," "alien", "Smurf", "Maritan," "Klingon", or "in love".[15] Bieber[16] shows that for example in Kosovo there has not been a single uncontested census since 1971, and in Bosnia-Herzegovina, no census was held between 1991-2013. Loveman demonstrates the case of Latin-America, which not only had a rich history of "fraud" (racial drift) in census reassignment by bribed parish priests in the colonial times,[17] but also brought the complete disappearance of race in censuses for decades.

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12. Examples can be brought from a number of European States, from Hungary to Lithuania. See, for example, "Report on the Preferential Treatment of National Minorities by their Kin-State", adopted by the Venice Commission at its 48th Plenary Meeting (Venice, 19-20 October 2001), CDL-INF(2001)019.

13. Domínguez, 1986; Walker, 2008; Kennedy, 2003; Onwuachi-Willig, 2007; Ford, 1994.

14. See for example Harris, 1993; Harris & Sim, 2002; Heyes, 2009; Morning, 2000.

15. Bieber, 2015.

16. *Ibid.*

17. Loveman, 2014, p. 74.

Turning to India, in the *Arumugam v. S. Rajgopal*[18] case the issue was whether a member of the Adi Dravida Hindu Caste and a Hindu converted to Christianity and reconverted to Hinduism could again become a member of the caste. The Supreme Court of India held that although usually conversion entails exclusion from the set of preferences reserved for castes and, as caste is predominantly a feature of Hindu society, if the plaintiff is accepted and recognized by other caste members as a fully reintegrated member, he may be considered so by the Court as well.[19]

It needs to be added that even when the protection of certain groups comes up in such egregious situations as genocide, definition-making for group-membership proves difficult and case law is inconsistent.[20] As Ambrus points out, a harsh discussion is going on concerning defining the justiciable victims of genocide. The objective approach means that the judicial body examines the objective existence of the racial or religious identity of the victim; that is, whether or not the victim actually belonged to a certain racial or religious group or actually possessed the so-called "objective" features that identify the members of these groups.[21]

In the *Akayesu*-case[22], for instance, the International Criminal Tribunal for Rwanda (ICTR) stated that in order to qualify as genocide, acts must have been committed against members of a specific group, and specifically because they belonged to this group.[23] In the given case, although the acts in questions constituted serious bodily and mental harm inflicted on the victim, they were committed against a Hutu woman, and hence, cannot constitute acts of genocide against the

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18. AIR 1976 SC 939.

19. The Court also noted that not all castes set forth Hindu religion membership requirements. In these cases conversion will not necessarily lead to membership loss. According to the Court therefore "the correct test to be applied in such cases is to determine what are the social and political consequences of such conversion and that must be decided in a common sense practical way rather then on theoretical or theocratic grounds." *Ibid*. A similar membership case was the N.E. Horo v. Jahanara Jaipal Singh (AIR 1972 SC 1840) where the issue was raised out of a rejection of the nomination papers of the respondent by the Returning Officer on the ground that she was not a member of the Scheduled Tribe anymore, and was therefore not eligible to contest from the parliamentary constituency. The Court held that she actually acquired membership in the tribe upon her marriage with her deceased husband.

20. For more, see for example Pap, 2015.

21. Ambrus, 2012, p. 942.

22. *Prosecutor v. Jean-Paul Akayesu*, Judgement, Case No. ICTR-96-4-T, T.Ch. I, 2 September 1998.

23. *Ibid.*, paras 521-523.

Tutsi group.[24] In the later Muhimana case, where, mistakenly, a Hutu woman, perceived as Tutsi, was raped, the court endorsed the approach that a victim of genocide can be identified by the perception of the perpetrator.[25]

For the randomness of categorization, consider the case of Rwanda: here the civil war centered around pre-genocide ID-cards, which formalized and concretized ethnic identity, distinguishing between Hutu and Tutsi as set forth by Belgian colonizers 1933.[26] In pre-colonial times, there were no ethnic groups per se, but 15-18 tribes that cut across ethnic divisions. The categories of Hutu and Tutsi did exist, but there were more social divisions that allowed for mobility.[27] Thus, initially people having 10 or more cows were classified as Tutsi; those with fewer as Hutu. After the initial determination, classification went by parentage.

The arbitrariness with which these initial ethnic determinations are made is fairly typical. For example, in the Soviet Union, from 1932 internal passports contained data on ethnicity. When this so-called "fifth line"[28] was introduced for the first time, the person was able to choose ethnicity,[29] but later the parents' ethnicity was inherited. In case of mixed families, a choice was to be made.[30]

Classification is similarly central in refugee procedures, where race, ethnicity, or membership in a "particular social group"[31], which can be a basis for persecution, it is a crucial element, where the asylum-seeker will make a claim pertaining to her affiliation and recipient authorities will carry out a validation procedure: first establishing whether the group in question is actually in danger of persecution, and second, whether the claimant is a member of the group. "The production and reception of the refugee legal narrative is a complex phenomenon involving several narrators with sometimes conflicting stories and objectives."[32]

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24. *Ibid*., paras 720-721, see Ambrus, 2012, p. 943.

25. Prosecutor v. Mikaeli Muhimana, Judgement and Sentence, Case No. ICTR- 95-1B-T, T.Ch. III, 28 April 2005.

26. Prevent Genocide International, URL: http://www.preventgenocide.org/edu/pastgenocides/rwanda/indangamuntu.htm.

27. Ramos, 2013. See also e.g., Freedman *et al*., 2008; Taylor, 2020; and Eltringham, 2004.

28. Followed surname, name, patronymic and date and place of birth.

29. Simonsen, 1999, p. 1071.

30. See Salenko, 2012, p. 2.

31. See for example, Sternberg, 2011.

32. See for example Zagor, 2014.

In earlier writings[33], we investigated whether international law recognizes the right (freedom) to the free choice of ethno-racial identity. Here we made two claims. First, that if the free choice of identity is to be recognized as a legal right, than it logically needs to include both its negative and positive dimension, that is, the right to both opt out and in into any chosen ethno-national or even racial group. Second, having scrutinized relevant international documents, we argued that the recognition of this right is not something hard-, or soft international law would actually set forth. We found that the right to free choice of identity does not seem to be a theoretically coherent and practically sustainable legal concept, nor is it supported by international statutory language. The requirement of the active, affirmative involvement of the individual in group membership, accompanied by the prohibition of mandatory inclusion by the state, along with the prohibition of collecting sensitive data, does not create an autonomous, *sui generis* right for the free choice of identity, since it does not and cannot include the right (of choice) to opt in to any chosen group.

An important exception from the resistance to legally "objectively" define group membership is the unique indigenous/aboriginal legal and policy framework, which habitually sets forth rigid and explicit membership requirements for the indigenous communities. Here the state either provides strict administrative definitions using some kind of an objective criteria, or it officially endorses tribal norms.

In the leading 1978 case Santa Clara Pueblo vs. Martinez case, the US Supreme Court confirmed "a tribe's right to define its own membership for tribal purposes [...] as central to its existence as an independent political community."[34] Another notable case (to be discussed later in more detail) for an official definition on membership in an ethno-national community, and here it concerns the ethno-religious majority, is Israel, where the Law of return, actually reflecting on the Nuremberg Laws, provides a definition for what it means to be Jewish under the state's immigration policy to invite all Jews to settle in their national homeland.[35]

2. Race, ethnicity and science

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33. Pap, 2015.
34. Santa Clara Pueblo v. Martinez, 436 U.S. 49, 72 n.32 (1978).
35. See Weiss, 2002; Kimmerling, 2002.

This second part of the paper turns to the discussion of how "objective" criteria, data and constructions of race and ethnicity provided by "science" translate into the legal discourse. We will map out historical (anthropological, phenological and geographic) and contemporary (genetic and biotechnological) approaches in the field of forensic science, race-conscious medicine, commercial DNA-testing, and point to the peculiarities of re-biologization of ethno-racial conceptualization and the reemergence of the marriage of geography and biogenetic conceptualization.

We need to begin by pointing out that identity politics, political activity and "theorizing founded in the shared experiences of injustice of members of certain social groups"[36] has been arguably the dominant trend in the second half of the twentieth century.[37] Rather than organizing around grand social or political narratives, identity political formations typically aim to secure the political freedom of a specific marginalized constituency, which assert or reclaim ways of understanding their distinctiveness.[38] As Heyes puts it, "Identity politics starts from analyses of oppression to recommend, variously, the reclaiming, redescription, or transformation of previously stigmatized accounts of group membership."[39] Building on Taylor,[40] the underlying concept is that identity is characterized by an emphasis on inner voice and a capacity for authenticity—that is, an ability to find a way of being that is somehow true to oneself:

> What makes identity politics a significant departure from earlier, pre-identarian forms of the politics of recognition is its demand for recognition on the basis of the very grounds on which recognition has previously been denied: [...] The demand is not for inclusion within the fold of "universal humankind" on the basis of shared human attributes; nor is it for respect "in spite of" one's differences. Rather, what is demanded is respect for oneself as different.[41]

Identity politics naturally puts self-identification in the center of conceptualization and operationalization, but discussions are contextualized by complex

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36. Heyes, 2016.

37. See second wave feminism, the Black Civil Rights movement in the U.S., LGBT movements, indigenous movements, for example.

38. Heyes, 2016.

39. *Ibid.*

40. Taylor, 1989.

41. Heyes, 2016 citing Kruks, 2001, p. 85.

and harsh debates concerning agency, revolving around "cultural appropriation" and the importance of "lived experience." However, contemporary models for operationalizing ethnicity also rely on "objective" criteria. A careful analysis of "objectivity" shows that above described five types of operationalizing models are often blurred and the boundaries between "scientific evidence", proxies, and what we may call "bureaucratic path dependence" are porous. For example, ethnic preferences in citizenship often require the knowledge of the national language[42], which is rather a proxy than an actual constitutive element of the "ethnic-essence." As for "bureaucratic path dependence", besides the aforementioned Tutsi-Hutu and Soviet passport entry cases, consider how official documents can construct and operationalize ethnicity and race, relying on the bureaucratic/administrative reality of intergenerational registries in documents. The peculiarity is that administrative categorization is often arbitrary and random, rooting in the temporary administrative givens, but leads to subsequent cementing of conceptualization and operationalization of ethnicity.

For example, the Nürenbergian definition of "a Jew" as an ethno-racial category (lacking any halachic, theological background) was institutionalized as having at least one grandparent whose documents indicated Judaism as religion: a standard data entry at the time (and in fact, often churches and religions entities were tasked with population registry). Thus, religion was racialized (operationalized and conceptualized) based on the administrative reality and bureaucratic feasibility to rely on official records that contained data on religion going back two generations. This definition still serves as a point of reference for (one of) the conceptualization of "who is Jewish" in Israel, when consciously applying this definition for offering inclusion (to all potentially persecuted Jews of the Diaspora) under the Law of Return[43] (and also used to identify thousands of Jewish refugees fleeing from Ukraine in 2022 to Israel[44] and Germany, where they are afforded preferential asylum and immigration regimes).[45] As mentioned above, native American and other Indian tribes will determine membership by registered (but not DNA-

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42. See Pogonyi, 2022, p. 13.

43. Kimmerling, 2002, p. 190.

44. See for example Sales, 2022.

45. Refugees who submit original documents (including birth certificates) proving their Jewish origin have an expedited path to German citizenship. See Toby Axelrod: Germany eases asylum requirements for Ukrainian Jews fleeing invasion, Axelrod, 2022.

analysis based) blood-quantum requirements. Again, the requirement of a documented ancestry is fairly common for ethnically preferential naturalization.[46]

What is even more fascinating is how "objective" conceptualization of ethnicity operationalizes "science". There are numerous historical accounts on how law and policy framing incorporated "scientific" notions in operationalizing ethnicity and race, but post-WWII social science discourse rejects biological approaches to race and ethnicity based on the stance that race is a social construct. However, as we will see, when there is a policy, commercial or political need and will, "scientific" language to describe and encapsulate ethnicity is revisited. It is also interesting to follow how "scientific" notions blur biological (genetic), geographic and anthropological disciplines. Let us begin the exploration with a broad (and consequently over-generalizing) overview of scientific explorations of race and ethnicity in the pre-Holocaust era surfaced in legislative and policy-making!

2.1. Historical snapshots from the intersection of "science", law and "race and ethnicity"

Due to spatial constraints, the upcoming sections fall short of providing a detailed, articulate assessment of the subject-matter, and only point to trends and examples. The rise of nationalism and the development of natural sciences, ethnography and anthropology brought a blooming interest in exploring ethnicity, race and nationality in the 18th and 19th century, as well during the first part of the 20th century. As a consequence, scientific theories and treatises became an integral part of policy making, legislation as well judicial reasoning. Consider for example the famous-infamous work of the Italian physician, scientific criminologists and forensic psychiatrist Cesare Lombroso (1835-1907), whose positivistic naturalism-based 'criminal anthropology' linked criminal behavior to biological factors such as atavism, epi-

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46. Article 116 of the Basic Law for the Federal Republic of Germany stipulates that those individuals whose ancestors were deprived of German citizenship on grounds of political, racial or religious grounds under the Nazi dictatorship of the Third Reich, should have the right to restore their citizenship. "In some cases, restoration of citizenship is available for very distant descendants of nationals who were nonvoluntarily deprived of their membership status. One of the most recent (and probably also the most peculiar) example is the Spanish government's decision to open up fast-track naturalization for descendants of Sephardic Jews who were expelled from Spain in 1492." Pogonyi, 2022, p. 8-10. In Croatia and Bulgaria and also Hungary facilitated naturalization is available for those who have some documented ancestry related to the respective countries, and declare themselves as members of the titular national group. *Ibid*.

lepsy and moral insanity and set forth the anthropometric analyses of criminals.[47] This era is characterized by the dominance of phenological taxonomies relying on earlier works by Carl Linnaeus[48] or Johann Friedrich Blumenbach.[49] Besides phenology (mostly skin color) taxonomies also relied on geographic origin when differentiating between (and conceptualizing) races. However, even in these times, when it came to legal operationalization, the anthropological notions were complemented, and often blurred with socio-cultural perceptions and "scientific evidence" was generously often unsubstantiated, and equated with "general knowledge."

To demonstrate this, consider the so called 'prerequisite cases' involving litigating race-based naturalization refusals in 18-19th century United States. Here, race being central to personal status, it was not a presupposed juridical concept, but was rebutted, shaped and defined by extensive litigation. Initially, as determined by a 1790 Act of Congress, citizenship was reserved for "white persons" only. Thus, litigating race-based naturalization refusal, questioning the authorities' classifications of the petitioners as "not white" brought 52 Supreme Court judgments until 1952,[50] when racial restrictions were removed.[51] Prerequisite litigation led to a case-to-case development of the judicial conceptualization and operationalization of "Whiteness", for example deciding whether applicants from Hawaii, China, Japan, Burma, Mexico, Armenia, etc. were "white" or not. The need to define race by the instrument of law was thus rooted in the institutionalized practice of race-based discrimination between "legally white" and other persons.

Judicial practice was nevertheless quite inconsistent. In 1878, in the first prerequisite case,[52] the Ninth Circuit Court held that Chinese could not be white—in accordance with the ordinary understanding held throughout the country, or "the well settled meaning in common popular speech."[53] A few decades later, in *Ozawa v. US*,[54] when a light-skinned Japanese claimed for naturalization, the U.S. Supreme

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47. See for example Ferracuti, 1996.

48. Linnaeus, 1758.

49. Blumenbach, 1797.

50. See López, 1996.

51. Naturalization was limited to African-Americans and *"Whites"* until 1940. At that time, Nazi Germany was the only other nation that limited naturalization on the basis of race. Okizaki, 2000, p. 478.

52. Re Ah Yup.

53. Okizaki, 2000, p. 478.

54. Ozawa v. US, 260 US 178 (1922).

Court held that it is not only the skin color and popular perception that matte-red, but that scientific categorization is also relevant, the Court found that Japanese are to be classified as members of the "Mongolian" race, and thus they cannot be Caucasian. In the same year, however, when Bhagat Singh Thind,[55] a "high caste Hindu of full Indian blood" [56] applied for citizenship on the grounds that as a "Caucasian", he was found to qualify as "white person" under federal naturalization laws. Still, the Supreme Court refused to equate "white person" with "Caucasian" as understood by contemporary anthropology. The Court held that such an inter-pretation defied "common understanding," stating, "It may be true that the blond Scandinavian and the brown Hindu have a common ancestor in the dim reaches of antiquity, but the average man knows perfectly well that there are unmistakable and profound differences between them today... "[57] The common-knowledge test meant nothing else but a performative whiteness, determined and evaluated by the judges. When setting criteria for "performative whiteness", both the degree of cultural assi-milation, and value system adaptation (such as practicing Christianity, for example) of the applicants, as well as the initial Europeanity of the kin-group was weighed. In US v. Cartozian,[58] Christianity, and the applicants' relation to European aristocracy was considered a sufficient performative whiteness criterion. Tehranian argues in the performative approach to defining race:

> the potential for immigrants to assimilate within mainstream Anglo-American culture was put on trial. Successful litigants demons-trated evidence of whiteness in their character, religious practices and beliefs, class orientation, language, ability to intermarry, and a host of other traits that had nothing to do with intrinsic racial grouping. Thus, a dramaturgy of whiteness emerged, in response to the interests of society as defined by the class in power—an "evolutionary functio-nalism", whereby courts played an instrumental role in limiting natu-ralization to those new immigrant groups whom judges saw as most fit to carry on the tradition of the "White Republic". The courts the-reby sent a clear message to immigrants: the rights enjoyed by white males could only be obtained through assimilatory behaviour. White privilege became a quid pro quo for white performance."

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55. US v. Thind, 261 US 204 (1922).

56. See GOTANDA, 1991, p. 29.

57. *Ibid.*

58. 6 F.2d 919 (1925).

The underlying idea is clear: whiteness, e.g. formal acceptance in the mainstream Anglo-Saxon culture is not a "naturally determined, exogenous variable in the equation. Instead it is an outcome, a reward dependent on performance and assimilation".[59]

2.2. Contemporary "scientific" notions of race and ethnicity: re-biologisation and the return of geography

This section needs to begin with Aspinall's observation: "All ethnic/racial terminology may be seen as a form of representation, whereby meanings are generated by a range of social categorizers in settings of popular culture, political discourse, and statistical governmentality".[60]

Social science genetics is concerned with understanding whether, how and why genetic differences between human beings are linked to differences in behaviours and socioeconomic outcomes.[61] As Harden and Koellinger explain, nearly every aspect of human individual differences is partly heritable, that is:

> [...] differences between people in their personality, educational attainment, income, risk tolerance, well-being, occupational choice, financial decision-making, political ideology, sexual behaviour, physical and psychiatric health, longevity and number of children are all affected in some way by differences in their inherited DNA sequence variation [...]. Thanks to rapid technological progress, people can now be cheaply genotyped[62] on arrays that measure specific DNA

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59. *Ibid.*, p. 836.

60. Aspinall, 2015.

61. See Harden & Koellinger, 2020. Also see for example Jocklin *et al.*, 1996; D'Onofrio *et al.*, 1999; Lykken *et al.*, 1993.

62. "The first sequencing of an entire human genome took more than a decade and cost around $3 billion, wrapping up in 2003. Within five years, a new generation of mass-produced, low-cost genotyping chips debuted that could perform an almost instantaneous high-resolution sampling of a genome. Soon, millions of people were generating profiles with hundreds of thousands of data points, of a kind called S.N.P.s (pronounced "snips"). (For comparison, the standard genetic profiling used by law enforcement since the 1980s consists of at most 20 genomic data points.) Consumers now might be able to see what Irish province they traced back to, and what genes made them cilantro-haters or twitchy sleepers. They could also see a menagerie of new relatives, enabling forms of familial research that scientists regarded as an inconsequential sideshow and left to amateur enthusiasts to tease out." Kroll-Zaidi, 2021.

sequences that commonly vary between people. This advance has led to the emergence of large-scale biobanks and consumer genetics companies, explosively increasing the sample sizes available for genetic research.[63]

But how did we get here? As Aspinall exaplains:

> The decades following the Second World War saw a marked decline in the popularity and influence of the eugenics movement and racial science [...] Anthropometry as a sub-discipline of physical anthropology [...] lost out to cultural anthropology and the rise in interest in race relations. The idea that racial intermarriage produced disharmonious offspring was soundly discredited by the UNESCO statements on race of 1950, 1951, 1964, and 1967. Similarly, the apparatus of racial science, notably the use of blood quantums—terms like "half-caste" and "octoroon"—disappeared from the lexicon.[64]

The underlying "new" science is as follows: genome-wide association studies (GWAS) "systematically scans the entire genome for possible associations with an outcome, examining millions of single nucleotide polymorphisms (SNPs), i.e., variations in individual DNA "letters", or base pairs. GWASs are typically conducted in samples with similar ancestries."[65] Furthermore, at the same time, the development of time person-focused technologies continuously expands the boundaries of ethno-racial conceptualization. For example standard AI deep learning models can be trained to predict race from medical images with high performance across multiple imaging modalities, which was sustained under external validation conditions (x-ray imaging, CT chest imaging, and mammography) and not relying on proxies or imaging-related surrogate covariates for race (e.g., performance of possible confounders such as body-mass index, disease distribution or breast density).[66] In other words, AI can accurately predict self-reported race, even from corrupted, cropped, and noised medical images, often when clinical experts cannot (and can also predict sex and distinguish between adult and pediatric patients from chest X-rays).[67]

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63. HARDEN & KOELLINGER, 2020.

64. ASPINALL, 2018.

65. HARDEN & KOELLINGER, 2020.

66. GICHOYA *et al.*, 2022.

67. See for example YI *et al.*, 2021; ENG *et al.*, 2021.

The development of cheap and fast genetic analysis brought a sweeping change in how the understanding of race and ethnicity is perceived, lived and operationalized. While in social sciences the dogma of the socially constructed nature is unquestionable, the reductive approach of biologism makes ways in a multitude of areas in law enforcement, immigration, (personalized and race-conscious) medicine, nationalism (in terms of how ethno-national ancestry and geology is understood), and how public and private imagination relates to ethno-racial identification. There are several additional peculiarities: a significant contributor to these processes and mechanism is the highly lucrative commercial enterprise of providing a special narrative for genetic ancestry. This, as we will see, is not only noteworthy because various government/state services (from law enforcement to naturalization) and even the medical profession will to a varying degree rely on this form of conceptualization and operationalization of ethnicity and race—despite the fact that a large body of literature raises serious doubts on the scientific validity of these projects. Furthermore, as it will be shown, not only do we experience the conflation of race and biology, but in the case of direct-to-consumer commercial ancestry conceptualization molecularized heritage, envisioning "biogenetic objectivity" actually relies on geography.

Curiously, re-biologisation is not only a successful commercial enterprise (which fulfills a market niche and a social desire to create novel aids in the process of developing and nurturing social identities) or a technical tool for governmentality for technology-savvy technocrats (with algorithm-based imaginary of predictive policing and forensic scientism seeing "genetics as the 'gold standard' of evidence"[68]), but it is also a tool for agents of social progress, equality and dignity endorse. Take for example the class-action lawsuit launched in 2002 (and which was ultimately dismissed) by reparations lawyer Deadria Farmer-Paellmanna, along with descendants of slaves, that sought monetary reparations from industries that demonstrated a long history of benefitting from slavery. Farmer-Paellmanna used DNA ancestry tests to prove that the plaintiffs could trace their ancestry back to African slaves.[69] Also consider arguments for race-conscious medicine triggered by the need to reduce the systemic discrimination caused by White-centric bias in how medicine works.[70] These cases all illustrates how genetic ancestry interacts with cultural claims and memberships. Thus, as Skinner observes "molecularisa-

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68. Ray, 2022.

69. Hina Walajahi *et al.*, 2019.

70. See for example Henrich *et al.*, 2010.

tion of the new genetics has provided ample evidence of the fallacy of essentialist, biologically deterministic accounts of race difference. Yet the genomic era has seen a striking rise in discussions of race/ethnicity and genetics together."[71] While "both biology and race/ethnicity are understood as plastic, emergent qualities rather than fixed, essential properties", this "reinscription of race" with genetics features in a lively politics of affiliation and self-fashioning. "Genetic scientists now have no choice but to work with overtly cultural and social policy based systems of race/ethnicity classification."[72]

2.2.1. AI, machine learning: race, medicine, anticipatory law enforcement

As Skinner explains:

> In recent years, it has become common place to highlight the ways in which, not only in forensics but also in biomedicine, population genetics, and ancestry testing, race, ethnicity, and biology are once again discussed together. This process has been referred to as "the molecularisation of race'' or the "genetic reinscription of race'' but is something more than the return of a repressed biological race determinism The putative geneticisation of race is a reconfiguration of knowledge and technologies that also encompasses new forms of datafication and visualisation.[73]

The "new regime of racial signification" is also described as "informationalization" as information becomes the material by which racial meaning is worked on. As cultural code meets computer code, analogue systems enter the digital world producing new modalities as well as reproducing old ones. "Digital epidermalization" is present in the attempts to produce DNA-derived suspect' mugshots.[74]

Artificial intelligence (and machine learning)-based technologies raise numerous novel avenues and challenges for operationalizing race and ethnicity. A 2022 report[75] confirmed that AI models can directly recognize the race of a patient from medical images, a task is generally not understood to be possible for

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71. Skinner, 2013.

72. *Ibid.*

73. Skinner, 2018, p. 334.

74. *Ibid.*

75. Purkayastha *et al.*, 2022.

human experts. Bias and discrimination in AI systems have been studied in multiple domains where self-reported race can be factored into algorithms that aid the prediction of health-care use, for example in the detection of melanoma, and mortality prediction. For example, it has been showed that AI models produce significant differences in the accuracy of automated chest x-ray diagnosis across racial and other demographic groups, leading to more patients who are Black and female incorrectly identified as healthy, compared with patients who are White and male.[76] Another study claims that one million Black adults in the United States might be treated earlier for kidney disease if doctors were to remove from an algorithm they use to diagnose people: a "race-based correction factor" introduced in the late 1990s to take into account results showing that Black people tend to have higher levels of creatinine (a molecule marking how well a person's kidneys filter waste)—and this potentially makes their kidneys seem healthier than they actually are.[77]

Controversies are not limited to the field of medicine: in 2020, Google, IBM, Amazon and Microsoft announced that they were stepping back from facial-recognition software development amid concerns that it reinforces racial and gender bias. The widely applied technology uses a vast number of images to create "faceprints" of people by mapping the geometry of certain facial features and classifies data into categories such as gender, age or race, and to compare it to other faceprints stored in databases. According to a 2019 report by the US National Institute of Standards and Technology, African American and Asian faces were misidentified 10 to 100 times more often than Caucasian men, and also had difficulty identifying women. The systems were trained using mostly white, male-dominated data sets.[78]

Predictive law enforcement habitually relies on big data and AI. An algorithmic bias was shown by journalists investigating the risk scores used in the US criminal justice system, in particular the Correctional Offender Management Profiling for Alternative Sanctions (COMPAS) for recidivism. They found that white defendants were more often mislabeled as "low risk" compared to black defendants, and the risk score was more likely to falsely flag black defendants as "high risk".[79]

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76. Also see Angwin *et al.*, 2016; Koenecke *et al.*, 2020; Obermeyer *et al.*, 2019; Wiens *et al.*, 2022.

77. Madhusoodanan, 2020.

78. See Dayton, 2020.

79. FRA, 2018, p. 7-8.

In 2017 the European Parliament called to identify and take measures to minimize algorithmic discrimination and bias and to develop a strong and common ethical framework for the transparent processing of personal data and automated decision.[80] While in the EU Article 9 of the GDPR confirms that the processing of sensitive data (including race and ethnicity) is prohibited, and lists only ten exceptions, machine learning also includes "proxy information" such as the height of a person, which correlates with gender, or a postcode, which can indirectly indicate ethnic origin in cases of segregated areas in cities, or more directly, a person's country of birth, and combining "likes" on social media with other data can also be used to determine a person's sexual orientation, ethnic origin or religion.[81] It needs to be added that there are strong arguments for the use of ethnic identifiers in data collection in order to be able to detect and correct discriminatory treatment and outcomes.[82]

2.2.2. Race conscious medicine

Kahn notes an increasing trend in conflation of race and genetics in gene-related patent applications, citing "the strategic use of race as a genetic category to obtain patent protection and drug approval."[83] Having mentioned medical diagnosis involving ethno-racial background information, a further explanation is in need. There are two reasons why ethnicity and medical producers may be connected. One relies on the often-debated premise that ethnicity signals generally applicable differences in the biological constitution of people. As seen above, this is generally considered to be an overbroad generalization (partly because of a lack of a narrow definition of ethnicity), and questionably efficient in clinical practice (although

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80. European Parliament resolution of 14 March 2017 on fundamental rights implications of big data: privacy, data protection, nondiscrimination, security and law-enforcement (2016/2225(INI)).

81. *Ibid.*

82. See for example Chopin *et al.*, 2014; Flores *et al.*, 2016; Osoba & Welser, 2017. See FRA, 2019, p. 9 and 22; Bakke, 2018, p. 139-140; Ferguson, 2017. Also see the law enforcement directive, Directive (EU) 2016/680 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data by competent authorities for the purposes of the prevention, investigation, detection or prosecution of criminal offences or the execution of criminal penalties, and on the free movement of such data, and repealing Council Framework Decision 2008/977/JHA, OJ L 119, 4.5.2016, p. 89-131.

83. Kahn, 2006.

it needs to be added that the problem lies in the fact that even though there may be valid theoretical and conceptual problems, if such measures produce a higher probability for a successful treatment, doctors will have good reasons to use these instruments).

The other reason to introduce ethnicity and medical and health policy considerations is because ethnicity often correlates with socioeconomic or cultural factors that have direct medical impacts. For example, the American College of Obstetricians and Gynecologists and the American College of Obstetricians and Gynecologists published a committee opinion recommending carrier screening for Tay-Sachs and Canavan Disease before pregnancy if both parents are of Ashkenazi Jewish, French-Canadian, or Cajun descent[84] because the likelihood for these conditions increases in this particular community, known for centuries-long intra marriage (but not due to an innate "ethnic" constitution.)

In the United States, asthma prevalence, morbidity and mortality have also been shown to be higher in Puerto Ricans, African-Americans, Filipinos and Native Hawaiians, and lower than average in Mexicans and Koreans. Similar differences have been observed for breast cancer incidence and severity, heart disease, or diabetes with Puerto Ricans and Mexicans having the highest and the lowest asthma prevalence, morbidity and mortality, respectively.[85]

2.2.3. Forensic ethno-racial data generation

As mentioned above, the new wave of innovations in forensics seeks to support criminal investigations by making inferences about the racial or ethnic appearance of unidentified suspects using genetic markers of phenotype or ancestry. The process had been termed as creating "biological witnesses" within a new "forensic imaginary".[86] These new techniques analyze genetic traits for skin tone and the next, yet not fully developed stage of research targets face shape, and allow the 'prediction' of the race or ethnicity of a crime suspect.[87]

A recent report from Australia covers a program linking missing persons with unidentified remains using DNA phenotyping that can predict a person's ancestry and physical traits without the need for a match with an existing sample

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84. Colaianni *et al*., 2010.

85. Via *et al.*, 2009, p. 228.

86. Williams, 2010.

87. See Skinner, 2018, p. 330-332.

in a database. For example, it identified a sailor who died after his ship sank during World War II.[88] In the United States, police departments have for years been using private DNA phenotyping services to generate facial images of suspects which then can be distributed to the public to assist in investigations.[89]

As Skinner explains, the application of genetic science to police forensics understood in terms of three overlapping waves:[90]

> The first saw, from the 1980s onwards, the establishment of genetic testing as a credible identification tool and means of linking known suspects to crimes. The second involved, in the next two decades, the growth of national police DNA databases containing millions of records that are routinely, speculatively searched in an attempt to match as yet unknown people to offences. We are now entering a third wave where new techniques infer personal characteristics of as yet unknown suspects using crime scene samples. Experts seek to predict the likely appearance of suspects using genetic markers of phenotype or ancestry. The growing list of potentially detectable Externally Visible Characteristics (EVCs) includes age, eye colour, hair colour, and skin pigmentation. [...] Forensic scientists also utilise analysis of biogeographic Ancestry Informative Markers (AIMs), a technique used for some time by genealogy services, to generate statements about the likely continental origins of a suspect's family. In the USA, commercial forensic services already make (currently questionable) claims to be able to produce DNA "mugshots" of suspects based on genetic information about ancestry, skin tone, and face shape. [Thus, while] the use of genetics in criminal investigation clearly are reconstructive and retrospective (identification once a crime has been committed), underlying the development of large-scale forensic DNA databases are predictive, deterrent and precautionary logics. [...] The growing scope of the NDNAD and other forensic databases around the world marks a significant shift in policing practice. [...] Databases no longer simply contain an "active criminal population" but a much larger population of people under suspicion. Hence [...] policing

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88. Schwartz, 2022.

89. *Ibid*.

90. Also see Williams & Wienroth, 2014.

increasingly becomes the production of suspects through the speculative ongoing searching of a database of profiles.[91]

The reliability of these technologies is questionable, for example:

> in the 1990s, the London's Metropolitan Police's Operation Minstead made ill-judged use the results of ancestry and skin pigmentation tests to shape the investigation into a serial sex attacker, wrongly (as it later turned out) convinced that the attacker was from a particular part of the Caribbean. Detectives sought "voluntary" DNA samples from a thousand men and intimidated those who refused to cooperate [...] In the Netherlands in 1999, the murder of Marianne Vaatstra whose body was found close to a centre for asylum-seekers prompted heated discussion of the potential value of ancestry testing and [...] lead to a framework for race testing to be enshrined in Dutch law in 2003[92] [...]. In 2012, the Minister of the Interior for the German federal state of Baden-Württemberg apologised to the Sinh and Roma community for the bungled interpretation by police of DNA evidence in the investigation of a series of murders in Heilbronn in 2007.[93]

Here DNA phenotyping predicted that a sample taken from a crime scene involving the murder of a police officer belonged to a woman of Eastern European ancestry. The same DNA was then linked to dozens of serious crimes across Western Europe, prompting a theory that the perpetrator was a serial offender from a traveling Roma community. It turned out that the recurring genetic material belonged to a female Polish factory worker who had accidentally contaminated the cotton swabs used to collect the samples.[94] Likewise, in the UK, Border Agency utilizing ancestry testing to verify refugees' narratives and biographies excited considerable opposition from scientists and antiracism campaigners.[95] In the US, DNA analysis led to the exoneration of several black and Hispanic men falsely accused or convicted by a biased justice system.[96]

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91. SKINNER, 2013, p. 978-979.

92. SKINNER, 2018, p. 332, also see M'CHAREK, p. 2013.

93. SKINNER, 2018, p. 332.

94. SCHWARTZ, 2022.

95. SKINNER, 2018, p. 332. Also see TUTTON *et al.*, 2014.

96. SKINNER, 2018, p. 337.

Thus, besides facial recognition technology and data management software, law enforcement agencies apply Y-chromosome haplotype reference databases. Both of which flourish and boom: even ten years ago, the UK Police National Database contained over 19 million facial images and in the USA the FBI's over 30 million facial images (and these did not include local police data).[97] The UK Police National DNA Database deleted over 1.3 million profiles after the European Court of Human Rights' decision ruling that the blanket inclusion and permanent retention of the DNA records of all persons arrested was unjustifiable.[98] In 2012 the database contained genetic records for approximately 10 per cent of the national population: holding not only of those convicted of crimes but also those who were only charged, or only arrested and not even charged, or only "subject to control orders under counterterrorism legislation". Out of the estimated five and half million people, 1.2 million had never been convicted of a crime.

A number of concerns have been raised: for example pertaining to the overall utility of these technologies, questioning whether the heavy investment in the technology has delivered in terms of crime detection rates, as the matching of crime scene DNA to a profile on the database results in only 0.3% of all convictions.[99] Skinner explains that the database is racialised along a number of different dimensions, besides being "predominantly young and almost 80 per cent male":

> Estimates [...] suggested that as many as 37 per cent of all black men in England and Wales had a profile on the database. This compared with 13 per cent of Asian men and 9 per cent of white men. Even more strikingly, it was estimated that 77 per cent of black males aged 15 to 34 had a profile on the NDNAD[100] [...] now 27 per cent of the entire black population has a record on the database, including 42 per cent of black males and 77 per cent of young black men. [...] The purpose and value of categorising NDNAD profiles by "ethnic appearance" is contested but potentially facilitates research into techniques that predict the ethnicity of an unknown suspect using crime scene DNA.[101] [...] Thus the NDNAD is racialised in its composition, the

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97. Skinner, 2018, p. 338.

98. S and Marper v the United Kingdom, 2009, 48 EHRR 50, for more see Skinner, 2018, p. 338.

99. Skinner, 2013, p. 978.

100. *Ibid.*, p. 980.

101. *Ibid.,* p. 981.

categorisation of all profiles by "ethnic appearance", experiments with ethnic profiling of crime scene DNA, and the procedures of ethnic monitoring.[102]

It needs to be added that "the harm of over-representation of ethnic minorities might be multiplied by the use of 'familial searching'—a technique that looks not only for exact matches between suspect DNA and database records but extends the search to near blood relatives".[103] Skinner argues that not only will such technologies implicate ethically dubious policing practices such as "DNA dragnets" that involve mass testing of local suspect populations on the basis of the predicted ethnicity of an unknown suspect, but the DNA database "can be misused for unethical scientific research purposes such as attempts to isolate genes that predispose particular ethnic populations to criminality."[104]

The Y-STR Haplotype Reference Database (YHRD), a searchable worldwide database is widely used across the world to help solve sex crimes and settle paternity cases. Holding more than 300,000 anonymous Y-chromosome profiles, it shows how particular genetic markers are fingerprints of male lineages in more than 1,300 distinct global populations. However, ethical concerns are raised for thousands of the profiles to have been obtained from men who are unlikely to have given free, informed consent, such as minority ethnic populations like the Uyghurs in China and the Roma in Eastern Europe.[105]

Besides questions concerning the overall efficiency and the potential abuses of the technology, Skinner also warns[106] about conceptualization for operationalization, arguing that :

> ethnic categories and systems of categorisation used in the NDNAD are deemed "not fit for purpose"[as] [...] NDNAD race data is based on the judgement of the police officers who classify genetic samples usually at the time of arrest using the following "ethnic appearance" codes (previously known as Identity Codes): Arabic or North African; Asian; Black; Chinese, Japanese or other South East Asian; White North European; and White South European. It is hard to reconcile data generated using these "6+1" categories with

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102. *Ibid.,* p. 982.

103. *Ibid.*

104. *Ibid.*

105. Skinner, 2018, p. 344.

106. Skinner, 2013, p. 985.

other datasets in the criminal justice system that use the 2001 Census "16+1" classification. The "16+1" categories are: Indian; Pakistani; Bangladeshi; Other Asian; Black Caribbean; Black African; Other Black; Chinese; Other ethnic group; Mixed White and Black Caribbean; Mixed White and Black African; Mixed White and Asian; Other Mixed; White British; White Irish; and Other White.

2.2.4. Ethnicizing voice recognition

A similar scientific language through which ethnicity can be conceptualized and operationalized is voice recognition. Depending on the language spoken, people can make predictions pertaining to the ethnicity of the speaker. For example, research on ethnic varieties of American English has found that listeners can identify speaker ethnicity from voice alone at above-chance: 79-97% rates based on segmental (phonetic) and suprasegmental (prosodic) cues.[107] Listeners were still able to identify the African American voices with greater than 50% selection accuracy after various manipulations of prosody and acoustic filtering.[108]

While the traditional use of voice recognition in law enforcement was used in criminal proceedings matching a recording with an identified suspect, AI-enabled "language biometrics" has been used recently in asylum procedures analyzing dialects in verifying applicants regarding their (geographic and ethnic) origin.[109] Language analysis is standard in the Netherlands and Norway for some nationalities and optional when there are indications that the applicant has provided false information. It is widely used in Belgium, Germany and Sweden:[110] "If someone speaks Levantine Arabic, for instance, this may be an indication that someone comes from a certain country."[111]

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107. Cheng & Cho, 2021; Thomas, 2007; Holliday & Villarreal, 2020.

108. Thomas & Reaser, 2004.

109. Automated text and speech recognition has been used by Germany's Federal Office for Migration and Refugees (BAMF) since 2017, AlgorithmWatch, URL: https://automatingsociety.algorithmwatch.org/report2020/germany/; Federal Office for Migration and Refugees, 2020, URL: https://www.bamf.de/EN/Themen/Digitalisierung/Digitales Asylverfahren/digitalesasylverfahren-node.html.

110. Kilpatrick & Jones, 2022, p. 15-17.

111. *Ibid.*

2.2.5. DNA-heritage certificates for commercial use

A significant contribution to the "molecularization of ethnicity" comes from the recently boosted commercial industry of genetic genealogy via direct-to-consumer genomic testing: services advertising to determine someone's identity through a broader web of genetic relationships and mapping and measuring of how relatives share DNA [112]. This "genetic panopticon," coined by Justice Antonin Scalia, [113] however, was not created by the government but by commercial entrepreneurs and their consenting clients. To get ancestry information, consumers submit a saliva or cheek swab sample. Testing companies also provide information on genetic traits and susceptibility to certain disease states. [114] Some companies provide information "pertinent not only to ancestry and ethnicity, but also to paternity, extended relationships and individual uniqueness." Others offer genetic tests designed to help customers improve their health in indirect ways, through nutrition and lifestyle. A third class of companies, offer disease risk testing and pharmacogenetic tests designed to complement or inform regular medical care. [115]

As Scodari explains:

> commercial genetic genealogy testing developed in the wake of the mapping of the human genome, which culminated in 2003. [...] When this testing ventured beyond examining DNA linked to the direct paternal (Y-DNA) and maternal (mitochondrial/MtDNA)

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112. Bobkowski *et al.* (2020) describe the procedure: "A test-taker registers online, submits a saliva sample, and logs back in after a few weeks to read their results. The results show a list of ancestry groups, percentages indicating what proportions of the test-taker's DNA match each group, and a color-coded map illustrating countries and regions associated with the ancestry groups. Ancestry testing companies maintain lists of ancestry information markers (AIMs) that vary between populations and individuals and are based on previous test-takers' AIMs. [...] A new test-taker may be added to this reference database if they report that all four of their grandparents were born into one reference population, and if their close relatives are not already in the database. [...] When a new consumer submits their DNA test, the testing company matches the test taker's AIMs with the AIMs of its reference populations [...] It then generates the test taker's results consisting of ancestry groups and their proportions, based on how many AIMs of the test taker's DNA match the company's reference populations. Testing companies use a default 50% confidence interval when identifying matches with their reference populations. A test-taker's AIMs that do not match a company's reference populations are reported as an 'unassigned' category."

113. Dissenting opinion in Maryland v King, 569 U.S. 435 (2013).

114. Huml *et al.*, 2020.

115. Nordgren & Juengst, 2009, p. 158.

lineages, each of which establishes distant ancestry along only one of the multitudinous genetic lines of an individual, autosomal or admixture tests, often branded as ethnic ancestry tests, became a feature, particularly in the context of a progressively multicultural U.S. market. [...] The autosomal procedure examines ancestry informative markers (AIMS) from throughout the genome, comparing the markers of the test subject to those of subjects from various regional populations in order to determine geographic genetic affinities [...] [and] consumers are allowed and, in many cases, encouraged, to understand this as the determination of one's ethnic and/or racial classification(s).[116] [However,] It's all privatized science, and the algorithms are not generally available for peer review [...] Most services initially explored such genetic affinities in terms of broad, continental designations—Asian, African, European, and Native American—that problematically parallel culturally fashioned racial groupings. By and by, subcategorization was achieved, but [...] can still be [...] influenced by culture and the profit motive. Moreover, the finer distinctions are even more debatable...

The methodology of the enterprises varies: ancestry.com,[117] with 20 million users, requires a saliva sample and sets forth that "Your ethnicity inheritance estimates which regions you inherited from each parent." The company uses two kinds of regions for estimation: "ethnicities" come from comparing the client's DNA to the DNA of people in the company's reference panel. "Communities" are people who share a significant number of matches with each other.

> Members of a community likely descend from a group of people who traveled to the same place around the same time or from the same place around the same time. [...] A reference panel is a set of people whose DNA is typical of DNA from a certain place—people native to a place or group. To make it into the AncestryDNA reference panel, people need two things: a paper trail that proves their family history, and DNA confirmation of their ethnicity. Their DNA is what your DNA is compared to when you take an AncestryDNA test.

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116. Scodari, 2017.

117. Ancestry, URL: https://www.ancestry.com.

In 2021 the company's reference panel had 56,580 DNA samples that divide the world into 77 overlapping regions and groups.[118] The categories appear to be somewhat random: a mixture of geographic regions (such as Baltics, Anatolia & the Caucasus', Arabian Peninsula, Aegean Islands, Benin & Togo, Central Asia-South, Cyprus, Egypt, England & Northwestern Europe, Finland, France, Greece & Albania, Iran/Persia, Ireland, Japan, Korea, Northern Africa, Northern China, Northern India, Northern Italy, Norway, Portugal, Sardinia, Spain, Sweden & Denmark , The Balkans, for example) and "classic" nationalities or ethnicities (like Basque, Eastern Bantu Peoples, European Jewish, Germanic Europe, Indigenous Americas-North), or a mixture like Eastern Polynesia & New Zealand Maori.

The probably most popular company, Myheritage has 96 million users, its site is available in 42 languages and is home to 82 million family trees with 16.1 billion historical records, and 5.6 million DNA kits in its DNA database.[119] Its model applies 2,114 geographic regions[120] and the conceptualization is maybe slightly more consistent, breaking down to "countries" and "ethnicity" with categories like Central African, Ethiopian Jewish, Kenyan, Maasai, Nigerian, North African, Sephardic Jewish – North African, Sierra Leonean, Somali, Indigenous Amazonian, Mesoamerican and Andean, Native American, Central Asian, Chinese and Vietnamese, Filipino, Indonesian and Malay, Inuit, Japanese and Korean, Mizrahi Jewish - Iranian/Iraqi, Mongolian, Nepali, South Asian, Baltic, East European, Finnish, Greek and South Italian, Iberian, Irish, Scottish, and Welsh, North and West European, Sardinian, Scandinavian, Middle Eastern, Yemenite Jewish, Melanesian, Papuan, Polynesian in the latter.[121]

23andMe, a company with five million genotyped customers also offers to tell the "likelihood of having certain characteristics. See how your DNA affects your hair color, taste preferences and more." In terms of ethnicity, its "regional populations are based on reference datasets representing 45 populations [...] [and] over 115 new recent ancestor locations which reflect specific coun-

118. Ancestry, "AncestryDNA Reference Panel", URL: https://support.ancestry.com/s/article/AncestryDNA-Reference-Panel?language=en_US.

119. *MyHeritage Blog*, URL: https://blog.myheritage.com/2021/12/myheritage-surpasses-1-million-annual-subscribers/.

120. MyHeritage, URL: https://www.myheritage.hu/.

121. MyHeritage, "Ethnicities around the world (beta)", URL: https://www.myheritage.hu/ethnicities/europe/continent-country-list.

tries where [...] ancestors likely lived during the last 200 years."[122] Here, the 45 "Ancestry Composition regional populations" are organized in a hierarchy, which reflects the genetic structure of global populations. For example, British & Irish is a part of Northwestern European, which is part of European.[123] The main groups are: European, Central & South Asian, East Asian & Native American, Sub-Saharan African, and Western Asian & North African, Melanesian. For exaample, European is broken down to Northwestern European, Eastern European, Southern European, Ashkenazi Jewish and "Broadly European" with subgroppus like British & Irish, Finnish, French & German, Scandinavian, Broadly Northwestern European, Greek & Balkan, Italian, Sardinian, Spain & Portugal, Broadly Southern European, Ashkenazi Jewish, Broadly European. The company distinguishes subgroups like Central Asian, Northern Indian & Pakistani, Bengali & Northeast Indian, Gujarati Patidar, Malayali, Southern Indian & Sri Lankan, Vietnamese, Filipino & Austronesian, "Indonesian, Khmer, Thai & Myanmar", Chinese, Chinese Dai, Japanese, Korean, Native American, Manchurian & Mongolian, Siberian, Ghanaian, Liberian & Sierra Leonean, Nigerian, Sudanese, Ethiopian & Eritrean, Somali, Angolan & Congolese, African Hunter-Gatherer, Coptic Egyptian, Egyptian, Levantine, Peninsular Arab, Anatolian, Cypriot, Iranian, Caucasian & Mesopotamian.

If the customer's self-reported ancestry does not match the dataset of that ancestry, the customer's dataset is removed as an outlier:

> In other words, even if a customer self-reports that their four grandparents came from the same country and share an ethnicity, the DNA sample must match the predetermined ancestry informative markers (AIMs) of that group [which, as discussed above, are based on the decisions of geneticists and their preconceived ideas about human population groups] in the reference database in order to be considered "pure" enough to be included in the database. [...] AncestryDNA focuses largely on recent ancestry, creating their databases by gathering DNA data from "people whose families have lived in one area [or region] for generations — Ireland, for example. Additionally, AncestryDNA communicates ancestry as an estimate by

122. 23andMe, "Reference Populations & Regions", URL: https://customercare.23and me.com/hc/en-us/articles/212169298-23andMe-Reference-Populations-Regions.

123. 23andMe, "Reference Populations & Regions", URL: https:// customercare.23andme.com/hc/en-us/articles/212169298-23andMe-Reference-Populations-Regions#h_99a0673a-8d08-4445-907e-03e298eb0c5c.

providing "a range of possible percentages" of a customer's ethnicity [...]. Overall, it is quite evident that both direct-to-consumer genetic ancestry testing companies "incorporate into [their] very infrastructure" assumptions about populations based on socially and politically constituted ideas of human groups and boundaries. Therefore, rather than distancing themselves from constructions of human differences based on a priori ideas around race and "undermin[ing] notions of the biological basis of race," direct-to-consumer genetic ancestry testing companies have contributed to "the molecular reinscription of race" and racial categories, replacing "race" with "geographic ancestry." In other words, by reading race into DNA data, genetic ancestry testing reinforces existing racial ideas and categories as well as socially, culturally, and politically constructed borders and boundaries. [124]

The reliability and usefulness of these tests have repeatedly been questioned. Nordgren and Juengst explain how that internet self-identification can be distorted if the information used is flawed or misinterpreted.

For consumer genetic services, this could happen in several different ways: (1) the testing services themselves may be unreliable or uninformative; (2) the explanation of test results may be inadequate or misleading; or (3) the science behind the tests may be too weak to yield meaningful results [...]. For example, the main methods for genetic ancestry tracing involve finding mutations in either the mitochondrial DNA or Y chromosome DNA that can help locate a person's maternal or paternal ancestors within certain populational "haplogroups". These haplogroups are defined by particular mutations that have occurred at different points of time during human history. But haplogroup membership is not the same as membership of a particular tribe, people or population, and will not tell the customer's geneological story in any detail. Even more importantly, both ancestral tracing methods provide haplotype information about only one line of descent (i.e., one ancestor per generation) out of all those that have contributed to the genetic make-up of an individual [...] But even when other autosomal marker tests are employed to estimate

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124. ALI, 2020.

the probability of biogeographical ancestry, many potential ancestral patterns may be consistent with a particular result.[125]

Mersha and Abebe point out that:

> Genetic ancestry inferred using ancestry informative markers (AIMs) is based on genetic/genomic data. Phenotype-based race/ethnicity information and data computed using AIMs often disagree. For example, self-reporting African Americans can have drastically different levels of African or European ancestry. Genetic analysis of individual ancestry shows that some self-identified African Americans have up to 99% of European ancestry, whereas some self-identified European Americans have substantial admixture from African ancestry[126].

Bobkowski *et al.* also add that:

> A test-taker may share an ancestry with someone in the current reference population for France, but that same match's great-grandparents may have been born elsewhere, and migrated to France from there. The number of ancestors and the spread of where they were born increases with each generation, potentially providing false leads in the test results. Results are further limited by the size and representativeness of the test companies' reference databases.

One recent inquiry for example tested the consistency of ethnic findings by using samples from forty-two identical twins (who share the same DNA). Concordance of ancestry results when twin pairs were tested by the same company was high, with mean percentage agreement ranging from 94.5% to 99.2%. When participants were tested by two different companies, results were, however much lower, with mean percentage agreement ranging from 52.7% to 84.1%. Concordance of trait (based on genome-wide association sequencing that focuses on differences in small nucleotide polymorphism) results was variable, ranging from 34.1% for deep sleep and detached earlobes to 90.2% for cleft chin.[127]

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125. Nordgren & Juengst, 2009, p. 166-168.

126. Mersha, 2015.

127. Huml, 2020.

As Robinson-Sweet puts it:

> The marketing for Ancestry's genetic testing services [...] belies the shaky science. Results from AncestryDNA are presented in pie charts with specific percentages and maps showing the region of origin, sometimes down to the level of county or city. This precision obfuscates the influence of selective practices on the results, much in the same way that records or LifeHistories displayed on Ancestry lack context for their existence on the site. [128]

As Putman and Cole explain, "DTC DNA capitalizes upon the appeal of symbolic ethnicity while perpetuating the idea that ethnicity is unproblematically biological, thus enabling and constraining identification accordingly." [129] In 2020 the US's population was 329 million. In the country DTC companies had 26 million U.S. customers, and "people are increasingly understanding their past in genetic terms, and genetic accounts of identity are just one way that technology is altering the way we live and represent racial difference" [130].

> main criticism of the scientific reliability of this type of DNA testing, especially for the purpose of tracing one's ancestral lineage, lies in the sampling and validity of the methods themselves. A valid random sampling of even a miniscule percentage of a large geographic population requires a database of DNA samples in the millions [...]. Instead, these companies rely upon opportunity samples, often composed of several hundred or a few thousand samples from small groups of contemporary people in various regions. [...] [They] asserted that genetic ancestry tests are no more than genetic astrology, explaining that what the scientific community knows about genetic ancestry is about whole group populations; thus, the specific ancestral information given to individuals based upon small samples of their DNA is a gross manipulation of the techniques involved in this type of DNA testing. Despite the endless stream of articles that challenge the science behind individualized genetic ancestry testing, companies providing the testing continue to experience growth in customers and profits [...]. The recent surge in customers, despite

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128. Robinson-Sweet, 2021, p. 85-86.

129. Putman & Cole, 2020, p. 210.

130. *Ibid.*

contradictory research by the scientific community, speaks to a strong
desire among […] consumers to fulfill a symbolic need constructed by
these companies.[131]

Putman and Cole also add that:

> the ability to freely choose ethnic identification is available only
> to specific U.S. Americans, namely, those who are White. Ethnic iden-
> tification is constructed through knowledge about one's ancestral
> heritage, often coming from family stories and/ or formal documen-
> tation. Information is used selectively within historical, structural,
> and personal constraints. While people are typically aware that their
> heritage is derived from multiple ancestors, they often identify with
> only some or none of those ancestors and can change their ethnic
> identification over time for a variety of motivations.

Unintended and controversial consequences of commercial direct-to-consumer
genomic testing are also manifold. For example, over the past years, more than 50
fertility doctors in the United States have been accused of fraud in connection with
using their own donating sperm.[132] Not only were many fertility fraud and mater-
nity-ward mix-ups uncovered, but generally, adoptees and foundlings can now locate
birth parents and identify unknown fathers.[133] "Some in the field fretted that such
investigations could violate the anonymity of birth parents or egg and sperm donors,
revealing painful family secrets (incest, rape and infidelity)".[134]

In a 2017 survey of adoptees who were using DNA to find their biological
parents it was found, that 66.5% of respondents had identified a match with a
half second cousin or closer. In a survey conducted by the Facebook group We
Are Donor Conceived 55% of respondents reported that they had identified their
donor, and 72% had identified donor.[135]

In sum, as Bobkowski *et al.* point out:

> Genetic ancestry testing companies […] in reality the tests reveal
> very little about race, ethnicity, and tribal status […]. The tests also

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131. *Ibid.*

132. Mroz, 2022.

133. Kroll-Zaidi, 2021.

134. *Ibid.*

135. Pennings, 2019. Also see Golombok, 2017. Hallich, 2017. Harper, 2016;
Chaubey *et al.*, 2016.

tend to ignore ethnic heterogeneity by grouping neighboring ethnicities in a singular reference category [...]. Moreover, testing companies' reference populations represent modern-day populations, meaning that they show with whom a test-taker has common ancestry today but not necessarily in the past.[136]

As Blell and Hunter point out: "The growth in the direct-to-consumer genetic testing industry poses a number of challenges for healthcare practice (and the information from these companies) poses risks both to patients as individuals and to racialized ethnic groups because of the way it misrepresents human genetic diversity."[137] They claim that:

> [...] there is a definite mismatch between what consumers think that they are getting from these tests and what the companies themselves state they are giving to consumers of their products. [...] Genetic ancestry results, with their percentages by region and often slick presentation, certainly provide an appearance of precision to the consumer but this very appearance is dangerously seductive and equally misleading [...]. Indeed a tendency has been noted in the conceptualization and implementation of personalized medicine, the tendency for this to become racialized medicine, with racial categories used as proxies for specific functional genetic information [...] Because of what we know about the way human genetic diversity is apportioned, any scientific inference made which assumes humans come in "neat racial packages" is not trustworthy and, as a consequence, the only valid way to understand what is in a person's DNA is to study that individual's DNA... [...]. The attempts to classify people into broad genetic groups based on the frequency of specific genes for, say, drug-metabolizing enzymes, are also likely to be poor predictors of medical outcome... As with racial groupings, the overall variation in the frequencies of such genes between groups is likely to be less than that within each group.[138]

They also state for the record that "ancestry estimates," as currently described in the literature, act as a reinscription of biological race. This is because of the inherent confusion that abounds regarding the concept "ancestry"—both for

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136. Bobkowski *et al.*, 2020.

137. Blell & Hunter, 2019.

138. *Ibid.*

clinicians, biomedical researchers, epidemiologists, population biologists, and especially the general public. Since there are no principled, operationalizable definitions of "ancestry" (nor "population" for that matter), clinicians, biomedical researchers, and the general public frequently project naive racial categories onto their findings.

As Suyemoto observes, the "lack of clarity and questionable congruence between researcher and participant understandings of ethnicity and race challenge the validity and impact of research utilizing these concepts This incongruence threatens valid operationalizations for research and challenges our ability to use these concepts in interventions to promote social justice and psychological health." [139]

2.2.6. Commercial DNA heritage certificates used for naturalization and Diaspora-programs

Probably the most curious example for using commercial DNA tests to operationalize ethnicity is Israel, which, being the "official national homeland" of the Jewry, invites Jews to make Aliyah. Under the 1948 law on the establishment of the State of Israel, its founders proclaimed the renewal of the Jewish State in the Land of Israel, which will open wide the gates of the homeland to every Jew. The Law of Return's preferential naturalization conditions only apply to Jews, and Israeli nationality is automatically accorded to them on request and they also receive special assistance helping to settle in Israel. As McGonigle-Herman explain, molecular genetic tests are now used to measure individuals' entire genomes, and scientific research has begun to describe the genetic basis for a common ancestry of the whole of the Jewish population:

> The Cohanim Modal Haplotype, the Jewish genetic marker that has received the most attention, [...] [as it] could represent the inheritance of over 100 generations from the founder of the patrilineal genetic line. [However,] the presence of a certain haplotype within an individual is not a guarantee that the individual is Jewish or not. [140]

There are three key ways in which Jewishness has moved to the molecular realm, with genes being defined as Jewish: population genetics; genetic testing for

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139. Suyemoto *et al.*, 2020.
140. McGonigle & Herman, 2015, p. 474.

both disease and Jewish identity; and human ova and sperm donation, as in the field of assisted conception. [141]

It needs to be added that the consideration of molecular information as a source of establishing Jewishness takes place in a socio-political environment, where laws and cultural norms (including some of the religious leadership) regarding the use of artificial reproductive technologies are quite permissive, due to their utility in tackling Israel's "demographic problem", that is in maintaining a Jewish majority. [142] Even the Orthodox Jewish community has been receptive to reproductive medicine:

> Many rabbis will permit married couples to use non-Jewish genetic donor material when no other measures exist to solve infertility challenges, and since Jewishness is halakhically passed from mother to child, non-Jewish sperm can create a Jewish child if the mother is Jewish. However, the inheritance of Jewishness is problematized when a surrogate mother carries a baby. This begs the question of whether a baby who has genetically Jewish parents, i.e. who donate the egg and sperm, but who is carried by a non-Jewish surrogate, will be deemed Jewish. In a recent case […], a rabbi opined that the baby technically had three parents, and because the surrogate was not Jewish, the child was not Jewish. Although most rabbis believe that the mother is determined by gestation and birth, some "recognize both the genetic and birth mothers as having maternal status". A minority believe that if Jewish parents contribute genetic material "the child's status should follow that of the genetic/intended social mother." [143]

In practice, genetic tests offer the possibility to legitimize some whose Jewishness is questioned. For example, based on DNA test, a rabbi granted a marriage license as a "bona fide Jew" to an East-European woman. [144] Even some underserved Jewish communities in Israel, such as the Lemba of southern Africa, Beta Israel of Ethiopia, the Kuki-Chin-Mizo or the B'nei Menashe, from India welcome these developments as proof of authentic Jewishness. Genetic evidence is crucial for halachic validation, as these communities often follow quite different

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141. *Ibid.*, p. 474-475.

142. *Ibid.,* p. 477.

143. *Ibid.*, p. 475.

144. *Ibid.*, p. 476.

cultural and religious traditions from ex-European Orthodox Jews (for example, the Lemba observe descent passed from father to son).[145]

Several authors stress that both the indexical power and validity of these genetic tests, as well as the socio-political operationalization of the concept of "Jewish genes" is ambiguous:

> For example, non-Jewish donor sperm and ova can be used in assisted conception clinics to produce babies that are legally Jewish in the eyes of the State, though only if the gestating womb is Jewish. DNA markers that could be read as Jewish on an individual level, however, need not be identified in these individuals. Conversely, a child could have Jewish genetic material, but without a Jewish mother would not be considered Jewish. These varying possibilities point to the ambiguity or outright contradictions across the field of Jewish genetics and the rabbinical sphere.[146]

Still, Jewishness as a measurable biological category can implicate access to basic rights and citizenship in Israel. The most widely publicized cases[147] pertain to eligibility to birthright trips, where participants need one Jewish parent by birth or be converted. If an applicant is from former Soviet Union, one birth-grandparent and passing a screening interview is also required to qualify, "heritage will need to be verified by a local Consul before being deemed eligible"[148] and the team may ask for "identification recognized by local community or by one of the recognized denominations of Judaism." Officially, according to the website: "while DNA tes-

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145. *Ibid.*

146. *Ibid.*, p. 475.

147. "In March 2019, several Israeli newspapers reported that the Chief Rabbinate admitted demanding DNA testing from immigrants from the former Soviet Union "in some cases" in order to establish Jewish ancestry. According to the Chief Rabbinate, applicants were asked to undergo testing to prove they are biological descendants of a person who was already officially accepted as being Jewish". Kohler, 2021, p. 37.
Some years earlier, in 2013, Israeli newspapers had reported on a somewhat similar case where a young woman was refused participation on a "birthright"1 trip to Israel unless proving by DNA test to be the biological daughter of her father." Staff, 2013. "After the news of this one student's experience made headlines, the Israeli Prime Minister's Office confirmed that many Jews from the Former Soviet Union ('FSU') are asked to provide DNA confirmation of their Jewish heritage in order to immigrate as Jews and become citizens under Israel's Law of Return. McGonigle & Herman, 2015.

148. Birthright Israel, URL: https://www.birthrightisrael.com/eligibility.

ting kits are a cool way to learn about your ancestry, we don't accept them as proof for eligibility. You must have at least one Jewish birth parent or have completed Jewish conversion through a recognized Jewish denomination."[149]

2.2.7. Conflating genetic testing with socio-political constructions of nations and ethnies

The Jewish case (beyond its particular irony, as it relies on the ad hoc racialization of religion by the Nurembergian legislation), where research on the "Jewish gene"[150] is blooming[151] is not unique. Ray documents how "Folkloristists, ethnographers, linguists and demographers alike have sought to identify, classify and characterize the 'Roma traits' and map them onto an imagined notion of Indian-hood", and India has "reappropriated the originary claim and started to embrace the Roma community as one of their 'own'",[152] and we witness numerous projects aimed at identifying (the geneology) of various groups as groups (and not individuals), be them the nation-constituting majority or minorities. For the former a telling example is the archaeogenetic research involving ancient genomes were used to

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149. *Ibid*. For example in the *"*UK Taglit-Birthright application form stipulates that applicants must prove their Jewish heritage through documentation, which theoretically formalises the applicant's biological attachment to his or her Jewish lineage. In compliance with this request, applicants had to enclose one of the following documents in their application: I. Provision of contact details or letter of confirmation from a rabbi/administrator at the synagogue which an applicant (or his/her parents, or grandparents) have previously attended. II. A copy of an applicant's parents or grandparents' ketubah (Jewish marriage certificate), as well as birth certificates which show a family line to the applicant. III. A copy of a Burial Certificate or letter confirming burial for relatives buried in a Jewish cemetery. IV. A copy of a conversion certificate and the details of a referee (e.g. the rabbi who performed the conversion). V. Letter from a Jewish community leader who is known to you or your family. VI. Name and contact details of a family member (sibling or first cousin) who has been on a UK Birthright trip in the past." Kassta, 2012, p. 172-173.

150. McGonigle & Herman, 2015, p. 476. For more on the *"*Jewish gene", see Abu El-Haj, 2012; Ostrer, 2001; Goldstein, 2008; Egorova, 2010.

151. On the origin and affiliation of Indian Jewish populations, using large sample size with combination of high resolution biparental (autosomal) and uniparental markers (Y chromosome and mitochondrial DNA), reconstructing the genetic history, see for example Chaubey *et al.*, 2016. Also see Behar *et al.*, 2006; Sutton *et al.*, 2006; Feder *et al.*, 2007; Behar *et al.*, 2010; Atzmon *et al.*, 2010; Moorjani *et al.*, 2011; Campbell *et al.*, 2012. Carmi *et al.*, 2014; Behar, 2008; Rootsi *et al.*, 2013; Nebel *et al.*, 2005.

152. Ray, 2022.

support linguistic theories and folk traditions to unravel the origin of Hungarian tribes and prove genetic relationship between nomadic Hungarians, Sarmatians and Huns (Xiongnus) before the 9th century. [153]

Conclusions

This paper was aimed at triangulating models and languages of conceptualization and operationalization for race, ethnicity and nationality, by law and policy, social theory and science. The noteworthiness of the discussion lies in the fact that self-identification is not only the dominant operationalizational tool in the 21th century, but it also serves as the basis for the multifaceted diverse robust social movement of identity politics. Here the conceptualization and operationalization of "objective" scientific notions for race and ethnicity are particularly fascinating—especially given the rejection of biologisation by social sciences and politics following WWII and standing firmly on the grounds of race being a social construct. "Objective" classificational criteria, in general, we showed, blurs the boundaries between "scientific evidence", proxies, and what we called "bureaucratic path dependence." We showed that if there is a policy, commercial or political need and will, "scientific" language to describe and encapsulate ethnicity is revisited. However, conceptualization and operationalization is often shaky: "scientific" notions blur biological (genetic), geographic and anthropological disciplines. We have shown how the development of cheap and fast genetic analysis brought a sweeping change in how the understanding of the race and ethnicity is perceived, lived and operationalized in a multitude of areas in law enforcement, immigration, (personalized and race-conscious) medicine, nationalism and public and private imagination. It was also noted that a significant contributor to these processes and mechanism is the highly lucrative commercial enterprise of providing a special narrative for genetic ancestry. Thus re-biologisation is not only a successful commercial enterprise (which roots in the social desire to create novel aids in the process of developing and nurturing social identities), but also a technical tool for governmentality—celebrated and used by surveillance technocrats as well as agents of social progress, equality and dignity. For sure, this molecular reinscription of race, ethnicity and nationality offers novel avenues for the politics of affiliation and self-fashioning.

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153. Maróti *et al.*, 2022. For other, similar research on different groups see Antonio *et al.*, 2019; Raghavan *et al.*, 2014.

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Abstract: The comparative legal scholar authors, working a broad project mapping how law conceptualizes and operationalizes race, ethnicity and nationality, provide an assessment of the triadic relationship between law, identity (making and claims recognition) and science. The project focuses on race and ethnicity, excluding the discussion of gender identity, but the latter is used as a point of reference to demonstrate the transformative changes in the past years in how the meaning of the terms of identity are assigned and conceptualized in social sciences and humanities, and to a certain degree in politics and law. Yet, there is a debilitating lack of linguistic and conceptual resources, cultural tools, and a solid and proper vocabulary for thinking about racial identity, which is particularly stark in the field of law, especially international law, which habitually operates with the concepts of race, ethnicity, and nationality when setting forth standards for the recognition of collective rights or protection from discrimination, establishing criteria for asylum, labeling actions as genocide, or requiring a "genuine link" in citizenship law, without actually providing defini-

tions for these groups or of membership criteria within these legal constructs. The paper provides an overview of the obstacles, challenges and controversies in the legal institutionalization. In technical terms, the operationalization of ethnic/racial/national group affiliation can follow several options: self-identification; authority given to elected or appointed members (representatives) of the group (leaving aside legitimacy-, or ontological questions regarding the authenticity or genuineness of these actors); classification by outsiders, through the perception of the majority; or by outsiders but using "objective" criteria, such as names, residence, et cetera. The paper also provides an assessment of how "objective" criteria, data and constructions provided by science translate into the legal discourse. Case studies will be used from anthropological/historical "scientific knowledge," and the operationalization of (performative) whiteness and otherness in the US, to contemporary examples of requiring DNA-heritage certificates in naturalization and Diaspora-programs (for example for birthright schemes in Israel); race-focused forensic datasets; and race-based medicine and reproductive technologies – where the methodology and conceptualization of "scientific race" is analyzed in a comparative and critical framework.

Keywords: anticipatory law enforcement, commercial genetic genealogy, faceprints, fethno-racial data generation, DNA phenotyping, identity politics, machine learning, naturalization and Diaspora-programs, reinscription, passing, proxy, race, race conscious medicine, voice recognition

Science, identité et droit. Croiser la conceptualisation et l'opérationnalisation de la race et de l'ethnicité

Résumé : Les auteurs, juristes comparatistes, travaillant sur un vaste projet qui cartographie la manière dont le droit conceptualise et opérationnalise la race, l'ethnicité et la nationalité, fournissent une évaluation de la relation triadique entre le droit, l'identité (la reconnaissance de l'identité et des revendications) et la science. Le projet se concentre sur la race et l'ethnicité, excluant la discussion de l'identité de genre, mais cette dernière est utilisée comme point de référence pour démontrer les changements transformateurs de ces dernières années dans la façon dont la signification des termes d'identité est assignée et conceptualisée dans les sciences sociales et humaines, et dans une certaine mesure dans la politique et le droit. Pourtant, il existe un manque débilitant de ressources linguistiques et conceptuelles, d'outils culturels et d'un vocabulaire solide et approprié pour réfléchir à l'identité raciale, ce qui est particulièrement flagrant dans le domaine du droit, notamment le droit international, qui utilise habituelle-

ment les concepts de race, d'ethnicité et de nationalité lorsqu'il établit des normes pour la reconnaissance des droits collectifs ou la protection contre la discrimination, qu'il établit des critères pour l'asile, qu'il qualifie des actions de génocide ou qu'il exige un « lien authentique » dans le droit de la citoyenneté, sans réellement fournir de définitions pour ces groupes ou de critères d'adhésion dans ces constructions juridiques. L'article donne un aperçu des obstacles, des défis et des controverses liés à l'institutionnalisation juridique. En termes techniques, l'opérationnalisation de l'affiliation à un groupe ethnique/racial/national peut suivre plusieurs options : auto-identification ; autorité donnée aux membres (représentants) élus ou nommés du groupe (en laissant de côté les questions de légitimité ou ontologiques concernant l'authenticité ou l'authenticité de ces acteurs) ; classification par des personnes extérieures, à travers la perception de la majorité ; ou par des personnes extérieures mais en utilisant des critères « objectifs », tels que les noms, la résidence, etc. L'article fournit également une évaluation de la manière dont les critères, données et constructions « objectifs » fournis par la science se traduisent dans le discours juridique. Des études de cas seront utilisées, allant de la « connaissance scientifique » anthropologique/historique et de l'opérationnalisation de la blancheur (performative) et de l'altérité aux États-Unis, à des exemples contemporains d'exigence de certificats d'héritage ADN dans les programmes de naturalisation et de diaspora (par exemple pour les programmes de droit de naissance en Israël) ; des ensembles de données médico-légales axées sur la race ; et de la médecine et des technologies de reproduction fondées sur la race – où la méthodologie et la conceptualisation de la « race scientifique » sont analysées dans un cadre comparatif et critique.

Mots-clés : *application anticipée de la loi, généalogie génétique commerciale, empreintes faciales, génération de données fethno-raciales, phénotypage de l'ADN, politique d'identité, apprentissage machine, programmes de naturalisation et de diaspora, réinscription, passage, procuration, race, médecine consciente de la race, reconnaissance de la voix.*