Travelling to Prüm –euphoria and dysphoria regarding the use of DNA data between and beyond borders

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Abstract

Since 2005 the international cooperation between EU Member states regarding the fight against transnational crime, terrorism and illegal immigration, started to be implemented through the so-called Prüm Decisions. In a society increasingly dominated by fear and insecurity, Prüm promises to reach the European Dream aided by the expansion of technologies that proclaim certainty. Through the exchange of DNA profiles, fingerprints and vehicle registration data, Prüm aims to blur the boundaries of law exchanging data across European countries, although dependent on the application of local rules. This paper is based on 14 interviews conducted with Portuguese Judges during 2017. It takes as a starting point the concept suggested by Sabina Leonelli of a "data journey" trying to understand how the data travels in Prüm. It considers the duality between the harmonization of technical procedures with the localities of each EU Member State and identify the frictions that the implementation of Prüm entails. In a second part we will try to analyze the data exchange in Portugal and the challenges that this travel poses in the perspective of the Portuguese judges. We argue that the travel in Prüm begins with a discourse of euphoria regarding the potential of DNA and the exchange of data. As the journey goes beyond national borders, a dysphoric narrative is perceived, where "we" and "others" emerge, indicative of the mistrust that hangs about this journey, challenges and dangers. Judges' narratives led us to the discussion of the neutrality of these technoscientific instruments (or their absence) and which, although legitimized by an aura of scientific credibility in its data journey, is not immune to uncertainties and fears.

Introduction

In 2005 international cooperation between the Member States of the European Union (EU) in the fight against transnational crime, terrorism and illegal immigration was implemented through the so-called Prüm Decisions,. It was gradually made operational between 2011 and 2015. According to the latest report[1] dated November 2018 (EU, 2018a) there are now 24 signatory countries operational, including Portugal. In a society increasingly dominated by fear and insecurity, Prüm promises to achieve the "European Dream" (Leonelli, 2016), aided by the expansion of technological devices that proclaim certainty. By exchanging information on DNA profiles, fingerprints and car registrations, Prüm seeks to dilute the boundaries of law by exchanging data between Member States.

From the crime scene to the transnational exchange of forensic DNA data between EU Member States however, there is a long way to go. In this travel different actors, geographical contexts, understandings of criminal investigations, legal frameworks and databases of genetic profiles intersect. Despite the efforts to harmonize and standardize

[1] United Kingdom, Italy, Greece and Ireland are not operational ((EU2018a). See also, Toom et al. (2019).

the so-called "big data" (Leonelli, 2016, p. 1), these global technologies are dependent on the application of local rules.

A starting point is the concept suggested by Sabina Leonelli of a "data journey," understood as "the material, social, and institutional circumstances by which data are packaged and transported across research situations, so as to function as evidence for a variety of knowledge claims" (Leonelli, 2016, p. 5). We explore how data travels in Prüm, considering the duality between the harmonization of technical procedures within the localities of each EU Member State and identify the frictions that the implementation of Prüm entails. In a second part we analyze the data exchange and the challenges that this journey poses in the perspective of the Portuguese judges.

We argue that travel in Prüm begins with a discourse of euphoria regarding the potential of DNA and the exchange of data. As the journey goes beyond national borders, a dysphoric narrative is perceived, where "we" and "them" [2] (M'Charek, 2013; M'Charek et al., 2014) emerge, perceiving the mistrust that hangs about this journey, its challenges and dangers. The narrative of the judges we interviewed demonstrate the neutrality of these techno-scientific instruments (or their absence) and which, although legitimized by an aura of scientific credibility in its data journey, is not immune to uncertainties and fears. Although there are several studies on the implementation of Prüm, none of them have focused on the judges' perspective.

The Data Journey

During periods increasingly dominated by fear and insecurity, control of contemporary societies has increasingly been made on the basis of the use and expansion of new instruments for a new culture of control (Garland, 2001). At the beginning of the new century, EU Member States have devoted attention to the power that forensic genetic technologies can have in aiding to fight crime, given the growing concern about crime and its control (Cole, 2001). In this sense, some EU countries have been driving more investment in this area, with the aim of controlling and monitoring suspicious populations and criminal bodies (M'Charek et al., 2013). The Prüm system is an example of one of these governance instruments used in EU Member States.

This new form of control operates to criminalize and securitize society. Namely, the use of identification technologies applied to individuals and populations (Machado et al., 2018), including genetic profiling databases where governments can access information on citizens, particularly suspect citizens (Cole, 2001; Hindmarsh & Prainsack, 2010; M'Charek et al., 2013; Machado & Granja, 2019; Toom et al., 2019). Prüm emerges from the need to respond to the threats that the demise of borders in the EU has brought and promises to achieve the *European dream* (Leonnelli, 2016), projecting a sociotechnical imaginary of a "collectively desirable future" (Prainsack & Toom, 2013) or, as Toom puts

[2] According to M'Charek et al. (2014) territorial borders "are involved in a politics of belonging, a politics of "us" and "them." Border management regimes are thus part of processes of othering."

it, as “aspirational regime” (Toom et al., 2019, p.50).

By diluting national boundaries, the surveillance once done internally, shifts its focus, being surveilled internally from the European territory (M'Charek et al., 2014). A new configuration of the borders arises originating a bio-citizenship (Rose and Novas 2005) controlled and managed through databases of forensic DNA. Based on unique characteristics in the individual, these technologies promise to bring more certainty and objectivity and to be less discriminatory compared to witnesses, eyewitnesses and judgments based on visible characteristics (Lynch et al., 2008). However, despite the innumerable potentialities of these technologies in the service of justice (Toom et al., 2019) there are also threats.

Several authors have drawn attention to the challenges that their use entails (Skinner, 2012, 2013; Wallace & Simonelli, 2006; Duster, 2004, 2006; Cole & Lynch, 2006; Hindmarsh & Prainsack, 2010; Machado & Granja, 2019; Toom et al., 2019). These border management systems, including Prüm, “suggests some of the ways in which the EU is gradually ‘transforming into a digital and selective border machine’” (Van Houtum, 2010, op. cit.in M’Charek et al., 2014, p. 476).

Barry (2001) views Europe as a "technological zone" where border regimes operate not only on their borders but extend their mobility of governance to domains that regulate multiple aspects of everyday life. While Prüm's implementation may be a useful tool by reducing the amount of personal data circulating across borders (Prainsack & Toom, 2010), several studies have shown that the implementation of transnational standards tends to generate frictions, showing that the stabilization and harmonization of practices is not enough to fill all the constraints that its implementation brings (Hufnagel, 2012; Santos, 2017; M'Charek et al., 2013; Machado et al., 2018).

Kierkegaard (2008) and Tofler (2008) highlight that the Prüm Regime was designed by a number of countries and was not discussed in their respective parliaments. Other authors emphasize the "principle of availability," since preserving national autonomy through the control of each country on its data can create mistrust among Member States (Balzacq et al., 2006). McCartney et al. (2010) underline technical challenges and scientific harmonization, but also the legal, ethical and socio-economic aspects underlying the implementation of Prüm. According to them, it is not only the technical issues that have to be safeguarded. Democratic involvement of national parliaments in their implementation must be addressed, as well as the cost/benefit relation of data exchange between Member States. Wilson (2016) draws attention to the possibility that resources between Member States are unequally distributed leading to questions on the principle of availability.

More recently, in interviews with the National Contact Points (NCPs) of the Member States, Santos (2018) raises the veil on the fears that the implementation of Prüm may bring in the perspective of these actors. NCPs express concern about the application of minimum standards as it may entail the suppression of individual rights. They state

that the type of personal information transmitted to each Member State is not only unregulated, but it is subject to the discretion of each country and of each contact point. The provision of this information is thus dependent on several factors: the sociocultural understanding of each contact point; the legislation in force in each country; and the administrative aspects which may lead to faster or slower provision of this information. Each Member State may provide minimal or more complex information, ranging from name, gender, date of birth and criminal record. It also depends on legal aspects, and for some Member States a formal request by the judicial authority is required, while in others the request may be made by the police authority (Santos, 2017). Thus, Santos (2017, p. 13) considers that "[t]he factors that may influence the decision to connect two countries can be associated to the perceived relevance in terms of cross-border crime, but also to simple matters of convenience, interpersonal relations between NCPs and political decisions." The geopolitical position that each Member State occupies may also have a reflection on the time and decision of exchange, revealing the narratives of the interviewed by Santos that neighboring countries establish faster connections, as a result of previous cooperation and with historical roots. Also Machado and Granja (2018, p. 245) explore the "ethics as embedded in the sociality of science" through interviews with NCPs. Moreover, while sustained by an aura of objectivity and infallibility (Lynch et al., 2008), these technologies are not immune to misidentification, and can generate false positive results[3], that is, false correspondences (Van der Beek, 2011; Santos, 2017; Machado & Granja, 2018, 2019; McCartney, 2014b).

If the use of technoscientific instruments can allow the achievement of greater objectivity, it also depends on the application of local rules. After all, it depends on the "data journey" and its material, social and institutional circumstances. In fact, the Prüm regime brings with it a heterogeneous set of actors, relations with data on technological infrastructures, operational procedures and criminal justice systems that support the circulation of information (M'Charek et al., 2013; Machado & Granja, 2019).

In the interests of greater citizen security such technologies may weaken the suspect body and may jeopardize rights, freedoms and guarantees. Presumption of innocence, protection of privacy, informational self-determination, informed consent, preservation of physical and moral integrity are some of the rights that can be constrained by the expansion of these technologies and the ensuing over-vigilance of citizens (McCartney, 2010; McCartney et al., 2011; Toom et al., 2019). The ideology of technoscientific harmonization coupled with localisms, local practices and social understandings can generate frictions. According to Santos "[t]he implementation of transnational standards tends to generate frictions with stabilized practices and institutional features, not only at a national level, but also in the sphere of the EU" (Santos, 2017, p. 11).

[3] According to van der Beek (2011) false positives can be around 60% of all correspondence in Prüm.

Initial Proposal

The initial proposal for the creation of a transnational data exchange system was based on a decentralized database in Luxembourg (Walsh, 2008; Machado et al., 2018; Santos, 2017; Bravo & Leal, 2018), since there already existed a database operating at INTERPOL. However, Member States did not agree and the choice was for each country to have its own national DNA database. Using the NCPs to exchange information, they maintained their institutional autonomy. These NCPs thus become central players in the Prüm Regime since then, in addition to developing the daily routine, they are in charge of decision-making processes as regards transnational data exchange.

On 27 May 2005, through the initiative of 7 EU countries, international cooperation between EU Member States began with the Prüm Convention or the Prüm Treaty. Signed in the German city of Prüm, it had seven signatory countries (Austria, Belgium, Germany, Luxembourg, The Netherlands, France and Spain)[4] (Phinnemore, 2013), with Italy, Finland and Portugal later joining the group. Although the Treaty was the initiative of a small group of countries led by Germany (Kierkegaard, 2008), "it already envisioned the expansion to a wider collective of all Member States." (Santos, 2017, p. 8).

Three years later, on 23 June 2008 the treaty would be extended to the remaining EU countries, with the Prüm Decisions: the Council Decision 2008/615/JHA on the *Stepping up of Cross-Border Cooperation, Particularly in Combating Terrorism and Cross-Border Crime*, (EU Council, 2008a) and the Council Decision 2008/616/JHA of 23 June on the Implementation of Decision 2008/615/JHA on the *Stepping up of Cross-Border Cooperation, Particularly in Combating Terrorism and Cross-Border Crime* (EU Council, 2008b). With this Treaty, the signatory countries committed themselves to creating the necessary instruments for the implementation of forensic databases.

However, when exchange became mandatory, in August 2008, not all EU Member States had an operational DNA database yet and specific regulation in this regard. For that reason, one year was given for signatory countries to operationalize the exchange of vehicle registrations and fingerprints and a three-year deadline (August 2011) for the exchange of DNA data.

On 19 July 2011, Council Decision 2011/472/EU on the launch of automated DNA data exchange in Portugal determined the deadline for implementing data exchange. To date only a few Member States (Austria, Bulgaria, Finland, France, Germany, Luxembourg, Netherlands, Romania, Slovakia, Slovenia and Spain) have complied with the operational requirements for automated DNA data comparison and consultation. Portugal was then the only country that had not yet begun to exchange data, but was authorized. It had fully implemented the general data protection provisions of Decision 2008/615/JHA, and was able to receive and transmit personal data (JOL 195 of 27/07/2011 p. 071) (Santos, 2017). A report produced in January 2017 indicated that there were still six countries that were not exchanging DNA data: Denmark, Croatia, Greece,

[4] France and Spain were the last countries to sign (Balzacq et al., 2006).

Ireland, Italy and the United Kingdom. At that time, Portugal had not yet implemented the Prüm decisions. In April 2018 Greece, Ireland, Italy, and the United Kingdom were not fully operational in the Prüm DNA system.

From technical harmonization to localisms – frictions

As far as fingerprints and DNA profiles are concerned, the Prüm system is implemented in two stages - those designated STEP 1 and STEP 2. In STEP 1 Member States send the profile that will be automatically compared with profiles based in the other Member States. This may result in a binary hit/ no-hit response, minimizing the possibility of intrusion into the privacy of the citizens involved in the search. As Machado and Granja (2018, p.254) claim, the use of binary language in this distance technology seems to bring with it objectivity and rigor creating a "(...) sense of objectivity by rendering invisible the subjectivity judgements, local circumstances and embodied practices involved in the production of forensic evidence."

In this way, STEP 1 only allows access to the DNA profile of the suspect, composed only of numbers. It ensures that the information given does not allow one to identify the searched individual. Only if there is a hit in STEP 1 the requesting country can ask the requested country to proceed to STEP 2. At this stage it is possible to access more precise information such as personal data relating to the DNA profile in which a match was declared.

Decision 2008/615/JHA stipulates the purpose and means by which information should be requested and exchanged, the limits of its use and storage. However it does not specify what data to provide in STEP 2. Decision 2008/616/JHA mentions the administrative and technical arrangements for the implementation of the previous.

For the purpose of technoscientific harmonization, signatory Member States are required to comply with a minimum set of requirements. In addition to having a national DNA operational database and respective legislation, before they start to exchange data with the other Member States they have to respond to a questionnaire on data protection and undergo a pilot run, where a simulation of data exchange is carried out with another country. Moreover, an evaluation visit is made to inspect the infrastructures at the level of the laboratories and the techniques implemented in each country.

A strategy for social control and crime was drawn up on the basis of the exchange of information from each country's databases, allowing both the automated, and systematic comparison of criminal scene profiles and suspicious individuals. Thus, in a crime committed in Portugal, the profile of the suspect can be searched not only in the national database, but also in the databases of Prüm.

Technical harmonization was a resolved aspect, but there were still other aspects whose harmonization became more complex to implement. The social, cultural, legal, and organizational contexts in which databases operate and are exchanged are also worthy of attention.

Indeed, at the date of implementation of Prüm not all Member States had national

legislation and national operational databases. In the set of countries that already had their DNA profiling databases we could find diverse laws and scopes of application, which could have implications for the exchange of information between Member States (Bravo & Leal, 2018).

In the group of signatory countries we find those who have adopted legislation concerning their national databases, with a more expansionist character, such as Austria, Denmark, Estonia, Finland, Latvia, Scotland, Slovakia, United Kingdom; and countries which have more restrictive legislation, which includes Belgium, France, Germany, Hungary, Ireland, Italy, Luxembourg, the Netherlands, Poland, Portugal, Armenia, Spain and Sweden (Santos et al., 2013; Machado et al., 2018).

These differences have repercussions on the population that in each legislation is included in the national DNA databases, size and growth rate of databases, access regime to databases and types of research admitted (Santos, 2017; Santos et al., 2013).

However, in different countries there are different criminal justice systems, with different police practices. In different EU countries national DNA databases are found with different legal regimes. If in some countries, such as Portugal, Spain or Italy, there is no specific legislation for data exchange, other countries have amended their law to adapt to this new reality.

As for the legislation in each country that frames the national databases, there is a great heterogeneity of laws that refer to different criteria, either at the level of inclusion of profiles in the database, or at the level of their removal, criminal typology, attributed penalty, order to include or remove the profile in the database, among others (Machado & Silva, 2013; Santos, 2017; Bravo & Leal, 2018). Each national DNA database has several files with DNA profiles, with each country deciding which files it exchanges with the other Member States. Some include in their databases suspect and convicted profiles (such as Austria or Finland) and others, such as Portugal or Romania, only include in their DNA database profiles of convicted individuals.

There are also different criteria inherent to the legislation adopted in each country regarding the operation of genetic databases. At this point, the different criteria for inclusion and removal of profiles, the police practices for collecting and storing profiles and the way the data circulate in Prüm may raise some challenges.

The custody of databases may be attributed to different entities, depending on the country: in the United Kingdom custody belongs to the police, while in Portugal the custody belongs to the National Institute of Legal Medicine and Forensic Sciences (INMLCF) (Santos, 2017; Machado et al., 2018, Bravo & Leal 2018; Santos et al., 2013). The responsibility of NCPs may also vary according to the legislation of each country (Machado & Granja, 2018). In addition, their academic background may be variable - some work in forensic laboratories, others may work in police forces. In some countries, only one person is responsible for the transnational exchange of information, while in others, two or more people may be involved in this process (Machado et al., 2018).

Most EU countries have already implemented DNA databases, but with considerable diversity in terms of legislation governing them, powers of the police, type of legislation, proportion of individuals included in DNA databases, inclusion and removal of profiles, among others.

In the context of this study, it seemed important to understand in the Portuguese case, how this "data journey" has been made; what is the evaluation that Portuguese judges have made of this journey; what are the challenges they perceive with Prüm; what legal, judicial, ethical and social challenges lie ahead with the development of a transnational system of information exchange between EU Member States?

Some studies done in Portugal in recent years address issues related to the Prüm challenges in a wider context (Bravo & Leal, 2018; Machado & Granja, 2018, 2019; Machado et al., 2018, Santos, 2017, Santos et al., 2013). Although, until the moment there are no studies in Portugal that show the judges' perception of DNA technology in aiding justice. This will be the first study carried out in Portugal on the perception of judges on the use of DNA technology and their perceptions about the implementation of the Prüm decisions.

Prüm intends to dilute the borders of the law through the exchange of data among Member States. But there are precise borders of the law which may not allow the data to travel in Prüm. The social, material and institutional circumstances associated with the context of each Member State can take this "data journey" down twisting paths.

Methods

This article is part of the postdoctoral research "DNA Technology Settings in the Portuguese Criminal Justice System: Analysis of Judicial Cases and Prospects of Judges (SFRH/BPD/108667/2015). Fourteen interviews were conducted with Portuguese judges during the year 2017 (three with judges of the Supreme Court of Justice and eleven with trial judges of first instance courts). During the period the interviews were carried out, the law regulating the Portuguese DNA profiles database was amended. However, respondents' answers were always based on Law 5/2008. Twelve of the interviews were conducted prior to the amendment of the law and only two interviews were conducted with the new law in force, but still without any practical effect. Only one of the interviewees mentioned that the law had changed, while the speech of the other judge did not show awareness of the recent change to the law. Another limitation of this study was the low number of interviews done. Requests for interviews were sent to the courts to all regions of the country, with a- low response rate. The low participation rate of Portuguese judges in the study may stem from the reluctance and resistance they still express to speak about issues of justice. Nevertheless, this was the first study involving the judges' perspectives concerning the case of DNA technology, something that other studies have never done. Prior to the interviews, the participants in this study signed an informed consent statement, and also agreed to the audio recording of the interviews. Only one participant did not authorize the recording. The excerpts from the interviews were

identified with numbers to protect the identity of participants. A qualitative methodology and content analysis of interviews were used (Charmaz, 2006; Clarke, 2005).

Results

Technological euphoria regarding the case of DNA within borders

The interviews, although few in number, show that for Portuguese judges there is a strong commitment to, and trust in DNA. *It is because of its characteristics, a very reliable proof, because it gives us what it affirms.* J01 By giving us what it asserts to give, judges are assuming that DNA evidence, in addition to being reliable, produces undeniable value since it is based on science. "I would say that there is a perception that the proof (...) scientifically validated ends up having a value ... raises less doubts (...) has an added value (...) gives them some added confidence (...)" J08

As another of the relevant aspects of the DNA technology they mention that it allows one to connect people with realities. In their perspective *this association is fundamental to the capacity that we have to frame and connect people to realities.* J02 That is, there is the notion that a DNA trace, alone, does not reveal anything interesting. But if we can determine this trace to be associated with a particular space, it can help tell the story of that criminal occurrence. "Evidently [scientific evidence] offers another degree of confidence that is not offered, for example, by the testimonial evidence (…)" J03

DNA acquires a greater weight than the so-called "traditional" evidence (Lynch et al., 2008). In this way, DNA is perceived as having a more certain value compared to the other evidence, because it has a scientific character that the other evidence does not have, allowing greater confidence on the part of the judge to take a decision.

> The scientific evidence, in this case the DNA, assuming that the elements were collected at the crime scene, and that the other elements on the database are reliable, obviously offers another degree of confidence that testimonial evidence for example, does not provide (...). J03

Regarding the work carried out by the police, the perception of the judges is that the Portuguese police have followed the advances in the evolution of science. In this regard, one of the interviewees noted: "I think there is a clear evolution, that is, from the time I started, what was done then compared to what is done today, we have evolved tremendously." J011

Having accompanied the scientific evolution in terms of investigation, in their perspective, the police have experienced an increase of their professionalization. Thus adapting to the new reality, they considered their police work more efficient. This assessment is, on the one hand, based on the perception that police are cautious at the crime scene and efficient in the collection of biological traces at the crime scene. "(...) the image I have is that the police are very effective and very cautious when they go to the crime scene for the purpose of collecting evidence." J012 On the other hand, it is based on the idea that the lack of knowledge of cases of contamination leads them to assume

that the work done by the police is well done. “(...) I think we have had no cases of contamination, so it means that the police will be acting correctly.” J01 Thus, the degree of confidence that judges attribute to DNA evidence is based on the assumption that all upstream work has been well conducted. Judges’ perception is based on their professional experience of the cases that reach trial.

When thinking about the evolution of police work in Portugal over the last two decades, judges assume that if science is being used in the service of criminal investigation, then the results that police provide are reliable. Thus, the lack of knowledge of cases of contamination serves to gauge the performance of the police and the rigor given by science. This idea is further reinforced by the fact that they consider there are no problems associated with the chain of custody of the evidence. One judge said: “I just had a situation where it didn't go well, that is, in tens, if not hundreds of cases just one happened.” J04. Another one said*:* “Only once has it happened (...) the very way in which it was placed / collected was incorrect and did not correspond (...)” J05

In their view, there was an evolution in police professionalism, based on visible practices in the approach to the crime scene, elimination of carelessness in procedures that no longer occur today.

> The professionalization of the analysis of the crime scene, which begins today for the first time, begins to have concrete expression. I mean, the inspector is not going to smoke his cigarette anymore, or the agent smoking and dropping the blot, and contaminating the entire crime scene. J01

Thereby, the trust that judges attribute to DNA evidence in assisting justice in Portugal is based on two elements: on the one hand, the scientific authority of DNA evidence, and the evolution of police work, on the other. It seems that the existence of DNA technology has allowed one to bring greater confidence to the criminal justice system. The existence of DNA technology seems to have reconfigured the way police work is done and understood and how the chain of custody of evidence is followed. Based on DNA technology and assuming that it is scientifically validated, the procedures and assumptions that guide it are assured. One of the judges considers that receiving this scientific expertise means that the chain of custody is preserved. “When the technical expertise comes to us, we consider that custody of the evidence is assured.” J04

Therefore the expertise arises with an aura of objectivity and scientific authority – a kind of “truth machine” (Lynch et al., 2008) - that leads the judges to attribute a status of trustworthiness, not only to this technology but also to the actors who deal with it, from the crime scene to the laboratory. “I do not always have to maintain a presumption of distrust, I have to start from trust (...).” J03

Starting from the presupposition of the scientific advances in police activity and the aid that science has given to criminal investigation, it appears that these factors have contributed to bring some calmness to the judges, given the problems that had arisen before. The increased scientific procedures of police work, along with the increase of

technologies in the aid of justice, appear as elements of security and tranquility for the judge. “It is realized that if they accomplish all this, we can rest easy that custody of the evidence is assured.” J05

Technological euphoria regarding the case of DNA beyond borders

If an optimism, belief and euphoria in the potential of technology at the service of justice within the national territory is visible in the judges' narratives, when one travels beyond the frontiers the narratives seem to be different. It seemed to be relevant to hear and analyze their opinion about the data exchange in Prüm and its challenges. The judges were asked their opinion about the legal, social and ethical challenges posed with the development of Prüm system.[5] At this level, the judges interviewed presented a dysphoric narrative regarding data exchange with other EU Member States. This dysphoric narrative is less related to the use of DNA techniques and all the safeguards that the harmonization measures took to implement Prüm. They are more associated with the sociocultural practices made by actors involved in the process and the administrative structures linked to the exchange of information in Prüm.

Legal and judicial challenges

Proportionality and Reciprocity. One of the aspects emphasized by the judges interviewed, and which they express with great concern is the issue of proportionality. One judge stressed the agreement made with the United States of America (USA), as one example.

> The Portuguese State made an agreement with the United States on the exchange of DNA information, personal data, at a time when the European Union was discussing with the United States a treaty as a whole, an information exchange agreement. But the Portuguese did not. The Portuguese Government, under Mr. Passos Coelho[6], made a definite advance and made an unsigned agreement with America alone! We give twice as much to America as we give the European Union ... J01

This topic appears in judges’ narratives when Donald Trump had just been elected President of the USA. The populist policies put forward by Donald Trump in the election campaign have contributed to a widening mistrust regarding the agreement reached with the USA and the differences regarding the agreement with the EU.

> So we give them *[Americans]* everything. Now with Trump (…) we should give more. I don’t know. Well, the government has changed. Maybe ... but it's an amazing thing. There is no way. It is a completely disheveled thing (...). J01

Two models of data exchange appear to coexist: one with the EU, where some

[5] This question was posed broadly on purpose to allow respondents to reflect freely on Prüm's challenges.

[6] Prime Minister of Portugal at the time.

safeguards were previously created [7] and another model of exchange with the USA, unregulated. "Because we have two systems: we have the database properly protected (…) and we have the system on shaky ground ... completely in question and uncontrolled for America." J01

If the fear of information exchange with the USA arises in the absence of any agreement to safeguard it, fears are also expressed about exchanging data with EU Member States. The fact the interviews were held while France was in a presidential election campaign, with the right-wing candidate Marinne Le Pen, one of the protagonists of this campaign, may have helped judges to reflect on the challenges that information exchange can present to a country like Portugal.[8]

If proportionality is the focus of attention regarding the exchange of data with the USA, then the concern regarding the exchange of data with the EU Member States rests on reciprocity. This challenge is linked to the recent developments in European politics and the possibility of electing pro-nationalist parties.

> Two years ago I would say that it [Prüm] had to be implemented, that it would be essential to exchange this data. We are in the European Union. At this moment I am waiting to see what the future brings and then I tell you. J02

This seems to be a manifestation of fear that the nationalist policies that are seen emerging in some countries may cause them to close their borders, which would lead to countries like Portugal exchanging their data, while these countries may stop exchanging theirs, leading to a new challenge regarding reciprocity.

The fear of the election of pro-nationalist parties and implementation of nationalist policies leads them to consider the possibility that borders between countries may be closed, and if so, fundamental rights may not be guaranteed.

> Are the borders still opened? If borders are closed why will information continue to be exchanged? If it continues as it has until today, that Member States protect fundamental rights, yes. But if this changes and some Member States do not protect fundamental rights, then I have doubts. Think about the elections in France. My question is: will the Portuguese in France have less rights there than here? If there is reciprocity, yes. As long as there is equality of human rights in the EU, yes to everything. J02

The possibility of closing borders between Member States would lead, in their view, to put at risk the guaranteed rights of their citizens now living in another EU country. In addition, they consider a possible imbalance, since Portuguese citizens living (or passing through) those countries, have to abdicate the rights that are constitutionally

[7] As shown in the section *From technical harmonization to localisms – friction***s.**

[8] Only two of the respondents refer to specific cases. One addresses the US context and another presents the French case.

enshrined for them as Portuguese according to the treaties in force that guarantee them equality. But by closing borders, citizens of these EU Member States would continue to see their rights guaranteed, while the Portuguese in those countries could see their rights curtailed. “(...) I do not know what is the reflex that this will have in the Schengen Area. Some day it will be abolished. I think its days are numered.” J03

The volatility of political change in each country is thereby reflected in the way Prüm is perceived. In this way, data exchange seems to make sense in a framework of stability and permanence where all factors remain intact. If there are political changes in one of the Prüm Member States, the agreement may no longer make sense. In the same vein, there is also the question of what Portugal has to offer to other countries, compared to what other Member States have to offer Portugal.

The possibility of differentiated treatment in relation to citizens of these countries and immigrant citizens was identified by the judges as another challenge. This issue is emphasized in their narratives as not being seen as positive to give more to the other countries than is given in the national context. For some judges, framework decisions provide sufficient guarantees to avoid giving more than we receive.

> (...) these framework decisions have sufficient guarantees (...) because there is a rule there where the limitations of national legislation apply. And therefore, this rule will allow us ... to defend ourselves. And therefore we do not give more than what we give to our own authorities. J01

However, others judges raised doubts.

> We do not want an open base, I say, I have no idea, but this is not the idea that allows any police anywhere in the world, to access our database. If this is not the case, and if in fact the requests are formulated in a timely manner, there may be legal questions. J010

The Portuguese law is more restrictive than those found in other member states and that the Portuguese judicial system gives a certain number of guarantees that other countries may not ensure can lead us to become more vulnerable. As Portugal gives more guarantees than other Member States, with legislation that regulates the DNA database being more restrictive (Santos et al., 2013; Machado et al., 2018), this may mean that our system will give more assurances to suspects about whom it exchanges data. However, with all Member States not presenting these same guarantees it may mean that Portuguese suspects in other countries may find themselves in a position of greater vulnerability and greater suspicion than those who pass through the Portuguese authorities. “in terms of guaranteeing the rights of liberty and guarantees, Portugal really always seems to be extra careful about other countries.” J013

Thus, they are not only highlighting the safeguards which are contemplated in national legislation, but at the same time, to re-emphasize the difference and friction between "we" and "others." At the same time, they are emphasizing what Prainsack and Toom (2010) called the *effects of (des) empowerment.* That is, in the meantime as the

Prüm Decisions empower the signatory countries with regard to population governance, they carry the risk of disempowering other Member States whose less expansionary policies may imbalance an agreement that is intended to be for data exchange among all.

The narratives constructed around the exchange of data can be considered as being linked to the notion of belonging, where "we" and "others" become visible. As M' Charek et al. (2014, p. 468) states "[t]erritorial borders just like other boundaries are involved in a politics of belonging, a politics of ‘‘us’’ and ‘‘them.’’ Border management regimes are thus part of the processes of othering".

In this game between the scientific method of data exchange coupled with the diversity of legal systems and political conjunctures, "we" and "others" (M'Charek, 2014) are always present.

Therefore, the aura of objectivity and scientific logic for the exchange of data in Prüm seems to be dependent on the ever changing political context and each separate country. The judges interviewed reveal that if social factors change, this technoscientific instrument can lead to a loss of rights and challenges. Thus, the narratives of the judges refer to the absence of neutrality of these technologies which, although under the mask of credibility and scientific methods (whose procedures the judges do not relate to), may ultimately contribute to the growth of inequalities among EU citizens (Plows & Boddington, 2006).

Harmonization of procedures vs. Diversity of legal systems and practices. Within the EU there are different types of judicial systems[9], with different laws and criteria regarding the construction of evidence. Although there has been an effort to harmonize procedures and bring scientific means to Prüm implementation, harmonizing procedures is different from harmonizing laws and practices in different social and political contexts.

The harmonization of practices that Framework Decisions 2008/616/JHA and 2008 /617/JAI, have addressed and discussed earlier solves part of the problem. If care was taken with these decisions to start the harmonization of procedures, this harmonization concerns the technical and scientific issues that the exchange of data entails. However, although this harmonization is done within the European framework (and all Member States are bound by them), this does not mean that they do not go against the Constitution of each country. In this sense, one judge stated that "what can be legislated at European level to be uniform, can contend with our Constitution." J04, Consequently, leads us to

[9] Under inquisitorial proceedings, the Public Prosecution bears the burden of proof. It has the monopoly of criminal investigation and the power to initiate the necessary diligences, assisted by the police. In inquisitorial legal systems, as is the case in Portugal (and most Western European countries), the judge "has disciplinary and administrative powers (…) and must ensure the exemption, objectivity and impartiality of the process" (Santos, 2017). In adversarial systems, like in the UK or the USA, the disputing parties (the prosecution and the defense) present versions of the facts and access to resources and experts can be unequal (Vuille, 2013). The judge plays an active role as "fact finder" and is regarded as the "experts of experts." Besides the crucial role of conducting the trial, the judge has to determine which pieces of evidence are admissible and evaluate them within the context presented. (see also Costa & Santos, 2019)

the question of the globalization of techniques with the maintenance of localisms. One of the challenges that Prüm poses is to make this management in a weighted way without rights being curtailed.

Regarding the legislation of each country in this specific area, there is a great heterogeneity of practices in each country.

> it will be complicated: in some countries the police can ask directly, in others it is the Public Prosecutor, in others it is the judge, it is chaotic… well… others have to be in the presence of lawyer (…) others do not recognize rights of the defendants ... J07

Exchange of data vs. Exchange of judicial mechanisms. Closely related to this previous aspect, the balance between exchange of data and the exchange of judicial mechanisms is another challenge identified by the interviewees. As part of the creation of the Prüm System, it was necessary to create administrative artifacts, in order to operationalize the exchange of forensic data in Prüm. In this way, the Prüm system not only has to manage the exchange of data, but also has to manage the exchange of judicial mechanisms, where different legal systems, different legislations, and different actors in each country collaborate in the *apparatus* (Appadurai, 1986) associated with the exchange of data.

> (...) personally, I think we're going to have a problem (…): we will have implemented a set of fundamental database exchange systems, but which is not ensured by an exchange of judicial mechanisms ... with the same depth. J05

DNA databases allow for the exchange of data between EU Member States and had in their basis a number of guarantees (including the necessary harmonization of procedures). However, the way in which the exchange of information is implemented goes far beyond this previously defined technoscientific *apparatus*. Thus, under the cover of their credibility and reliability, the operationalization depends on administrative structures that, in addition to not being able to ensure the scientific, can also enhance the manipulation of information, depending on the understandings that each actor in each country makes of the situation.

In this sense, if the creation of a data exchange system allows for security and credibility, it does not operate on its own. The data exchange system operates in close coordination with a unit that centralizes information and which is responsible for making the bridge between the profiles and the legal framework.

> We have Eurojust[10]. But, for example, Eurojust is almost a ticket counter (...) There are some magistrates: "Hey, man, I need something here. Can you get it?"

[10] The European Union Judicial Cooperation Unit (EUROJUST) was established in December 2000 and implemented in March 2001. It is a unit composed of magistrates, prosecutors and police officers from all Member States.

> "Wait, I'm going to ask my Italian colleague. Hey! Giuseppe, can you get this for me?" "Ok." It's like a customer service counter, isn't it? J05

In this way, acts of managing profiles with legal acts seem to co-exist on the same level. The Framework Decisions did not take this issue into account, leading to an actor who is responsible for carrying out an act concerning the management of the profile, who does not necessarily have to be aware of the legal framework of the country to which it relates, or vice versa. Thereby, the imbalance found between technical harmonization and respect for each country's legal identity can be a further challenge.

> through Interpol, through Eurojust, which is a bureaucracy (…) who is going to decide there, giving indirect judicial powers that are not (…) And there are acts of managing the profiles - I think this is what is bad - I think there are acts of these bases that are going to be bigger and bigger ... they are acts that contend with rights. If they are acts that contend with fundamental rights, they are acts, strictly, of a legal nature. J05

DNA databases vs. administrative databases. If DNA databases are properly regulated and harmonized at EU level, the way the data is exchanged depends on other actors and the existence of administrative databases. It is therefore important to consider how DNA databases can be made compatible with administrative databases, resting on the different logics of those that guided the safeguards of DNA databases.

> (...) if I have here, for sure, databases that are created with a strong judicial background, and for having a strong judicial background behind them, a set of guarantees of defense, etc, etc, etc, I can not later have a universe of administrative databases, work databases, with administrative management. J05

Thus, if at a legal level it seems that the process of producing evidence is always assured and accessible to the judge, who can monitor its development and ensure that the chain of custody is preserved, with the implementation of Prüm, by allowing the process to travel between different jurisdictions and handled by different actors (judges, police, laboratory technicians, administrative, etc), such guarantees may be called into question.

> if we do not create this framework we will say that although this valence is judicial, we will necessarily give power to administrative bodies, no matter how respected, higher or lower, but they are administrative bodies, right? J05

Judiciary bodies vs. Administrative bodies. Another distinction must be made between judiciary bodies and administrative bodies. According to the interviewees, one case may first start in a court of law in one Member State and end in another. When starting in another Member State (other than our country) the judge interviewed questions the way in which the case was constructed. In Portugal the procedural guarantees given to defendants are based precisely on the fact that all acts are legal. But this is not the case in all legal systems in Europe. Thus, as a judge says, this may mean that some procedural

documents may have been drawn up on the basis of administrative rather than judicial acts.

> They gave me a jurisdiction and I begin to judge and, at some point, I have half of my fundamental process of creating this evidence through a set of administrative procedures, determined by administrative bodies. J05

These differences may have implications in the chain of custody of evidence and, therefore, in the fundamental rights of citizens, due to the different logics that underlie the judicial system and the administrative system that supports the exchange of data.

> The judiciary and the administrative bodies have totally different ways of thinking. The judiciary has a logic that the administrative does not have, which is: I do not presume that the man is guilty. I have to give the guarantees from the beginning that he ... if he wants to say something, if he wants to induce, to lead the investigation along a certain path, he can do it. That is, I cannot say: "Ah, you're not, certain. You're already sure here about this." I have to have it from the beginning, because if I do not have it from the beginning, if I come to a certain point in the process, he will no longer have the technical, probatory ability, whatever, to invalidate the judgment that is arrived at. (...) That is why we (...) when we constitute the person as 'defendant'[11] from the beginning, is not because: "Haha, I'm going to put a little mark by your name and now you're like an 'defendant.'" "No. It is to give him this power and then say: "From here, if there is anything, I have to notify you, if there is anything, you have the right to be heard and to contradict. You have the right to this." That is, we have this logic. From the beginning we are going to have to do this because we know that an eventual conviction or a process is a sum of acts and each act may condition the next act and the next act (...). We will arrive at a time when he no longer has the capacity to reverse all those acts, because it is impossible (...) J05

Thereby, if the judicial system is based on the logic of a chain of facts that lead to a logical reasoning of guilt, based on evidence brought to the process (certainty), the administrative system is guided by a logic of effectiveness, that is, giving dispatch to the legal processes and the basic compliance of the rules that sustain that action.

> The administrative body does not have this. That is, the administrative body functions more through the logic of the result. "Hey, this does not matter. Then maybe I've done this wrong? " We do not have to think that: "Ah on the other side are the good ones. Hey, you might not have missed." (...) if this is done by people there is always the possibility of error. J05

[11] He calls it 'arguido'. This figure is different from the one of suspect, since in the Portuguese legal order, to change from suspect to "arguido" there must be strong evidence about that person. He/she has to be formally charged.

It is not up to the administrative body to see if all the legal procedures have been followed and all rights have been scrupulously respected. Without specific training this administrative body also may not respect the procedural guarantees. Thus, since Prüm cannot guarantee that the judicial process is a set of procedural acts that, logically linked, in case of error one cannot perceive what went wrong. Consequently, either the case is filed or, alternatively, the burden of proof can be reversed, leaving the defendant himself/herself to prove that the events of which he/she is accused did not happen in that way.

> I accepted that evidence with that value, because the law tells me that evidence has that value. The accused will not be able to contradict. I'm glad. (…) this can happen, that is, we are having great decisions, beautiful decisions, maybe 99% of them will all be spectacularly well grounded and according to what really happened, but it may not happen, because we do not have it all ensured. J05

Thus, it seems that with the implementation of Prüm we will not only be in the presence of an exchange of judicial databases as well as of administrative databases.

As all these guarantees are not ensured and there is a mixture between administrative acts and judicial acts, the exchange of information on the basis of genetic information may lead, as M'Charek says, that this circulation of data "produces new identities" (M'Charek, 2016, p. 19).

***Trust in entities*.** The narratives of the judges also refer to the issue of access to data and authorization to exchange data, where the issue of trust emerges.

Concerning the access to data, in the judges' view, databases being linked to each other make them potentially more vulnerable. Therefore, it is important to understand who will be given access to data from the Portuguese database. "(...) if we are going to give access, we have to see to whom we give access online (...) Because then they have to be connected (…). So, being connected, they are vulnerable." J01

Concerning the entity that has the authorization to exchange data, it is something that also worries the interviewed judges, showing here more confidence in certain actors than in others.

> The main issue, as far as I am concerned, is the reliability of data entry. When it is the police, who have the possibility to control the insertion of elements and data, in principle, okay. Now when they are information services, the data insertion does not have the same base ... J03

In this excerpt the confidence placed in the work of the police is visible, but with some skepticism regarding the work carried out by the intelligence services.

Another mentioned aspect, closely related to these concerns are the different types of information that can be conveyed in Prüm. According to the previous judge

interviewed and following his reasoning, we may be in the presence of accurate information and speculative information.

> The main issue for me is the reliability of data entry. When the police have the possibility of controlling the insertion of elements and data, in principle, that's fine. But when there are information services and the input of the data is not based on… Because there are two types of information: there is speculative information and accurate information. Now when I put there: "This is 'António dos Azulejos', who is known to be having an affair with Maria do Amparo, who is related to a terrorist cell." Is this so? Or maybe it's not? Who gave this information? For what reason? This is another kind of information. J03

The quality of the information seems to be associated with its origin. The information given by the police appears to be more credible and secure than the information given by information services.

Despite a greater reliance on information given by the police than information services, it is further emphasized that even the information considered objective is not immune to the possibility of manipulation. "(…) even objective information itself can be the object of (…) manipulation (...)." J03

Again, it is revealed that Prüm's aura of scientific legitimacy is very dependent on sociocultural practices and understandings made by actors involved in the process. In the judges' narratives, a discourse of trust in the work developed by the police arises, but they express doubts when the information is provided by other entities. Thus, by enabling other actors (other than the police or the judicial system as a whole) to have primacy in the exchange of data, may result in the rights of the defense not being safeguarded.[12]

Ethical and Social Challenges

Finally, the interviewees were invited to reflect on the ethical and social challenges that the exchange of data in Prüm can bring.

Revisiting new forms of suspicion. According to the Portuguese judges, the technological development provided by Prüm is, on the one hand, a powerful instrument for the governance of bodies, in particular suspect bodies, and introduces surveillance mechanisms that can reproduce old forms of suspicion. Through new instruments, sustained by their enhanced scientific method and infallibility (Lynch et al, 2008), according to the judges' narratives Prüm can perpetuate and reproduce inequalities, stigmas and classifications that were considered to have been erradicated.

[12] In the same route, Santos' study (2017, p.12) points out that, "since most DNA databases custodians operate within a police structure, the perceived public trust in the police and in DNA technology is a particularly relevant issue in the discourses of NCPs from CEE countries".

> Otherwise there will be the rebirth of those theories... all those sick with a certain disease are more likely to commit crimes, the races ... and that had gone away, and well, and so why has it to go on. J011

The *inscription of the morally accepted suspicion* that Lynch and McNally (2009) referred to can be seen in their responces by emphasizing the mismatch between the implementation of Prüm Decisions and the national law regulating DNA databases. Judges emphasize the fear of always investigating the same people. *"I am afraid because we are the Turks here. I am afraid of discrimination against people who may be in the database." J02*

They also express concern about the proliferation of "genetic suspects" (Hindmarsch & Prainsack, 2010). "I am afraid that we will be tempted to always investigate the same individuals*."* J02

This inscription of suspicion, in addition to focusing on a particular group of individuals, expands to individuals from certain places – transforming Prüm into a "technological zone" (Barry 2001), where individuals from eastern countries become the most frequently used example. Thus coming to meet the suspicion of M'Charek et al., (2013, p. 3) that these systems are organized around notions of identification, identity and "otherness." And also point to the idea of "mobile identities" mentioned by Skinner (2012).

> For example, we have countless situations - and it has already happened to me - theft, and robbery by elements from, for example, Romania, Ukraine, who come here and do it in a very professional manner (…) because these people worked in Italy, worked in Spain, worked in France before arriving here. They are very mobile groups (...) J05

With regard to the identification of these individuals, the judges also highlight the difficulties found when confronted with these individuals. Thus, the narratives expressed by the judges point to the idea of a lack of technological neutrality and to the idea that a genetic profile used to find a suspect may "generate an unknown suspect" (M'Charek et al., 2013, p. 12).

> The problem we have then, is to say that here is that person who was condemned, because one day a Trocianus arrives here and says: "Me? I've never had anything to do with it. I've just arrived. Was I ever this Trocianus?" ""Ah, but here it says that you are Trocianus." Aren't you the son of Ilda Trocianus? " Yes, I am." "Then you are here. It was you." But I wasn't there.".J05

This excerpt shows the social visibility of certain groups as being responsible for crime and terrorism, also analyzed by Machado et al. (2018). The genetic suspect thus becomes a transnational genetic suspect for being of a disadvantaged and generally foreign class, in particular groups from Eastern Europe: Romanians, Gypsies, Africans and Muslims (M'Charek et al., 2014).

In this way, it would appear that borders have different configurations for different Member States. Suspicion also becomes more visible to some individuals or groups than to others (M'Charek, 2013).

Proportionality and reciprocity. The fact that the Portuguese law is more restrictive than those found in other member states and that the Portuguese judicial system gives a certain number of guarantees that other countries may not ensure can lead us to become more vulnerable. Again, the excerpt "I am afraid because we are Turks here." J02 rises the question of proportionality and reciprocity which seems to be a factor influencing the vulnerability of each country. As Portugal gives more guarantees than other Member States, with legislation that regulates the DNA database being more restrictive (Santos et al., 2013; Machado et al., 2018), this may mean that our system will give more assurances to suspects about whom it exchanges data. However, with all Member States not presenting these same guarantees it may mean that Portuguese suspects in other countries may find themselves in a position of greater vulnerability and greater suspicion than those who pass through the Portuguese authorities."in terms of guaranteeing the rights of liberty and guarantees, Portugal always really seems to be extra careful about other countries." J013

Shadows of the past. Lastly, they highlight the uses or abuses that such usage may entail, which can move us to the shadows of the past or a return to the classification of people and the old eugenics or Lombrosian theories.

> To think that there may possibly be misuse. It can always be done internally. Of course, on the international level, things increase in an exponential way, don't they? (...) The States are closing, that's what we've been watching, isn't it? They protect themselves, it seems that shadows of the past emerge from near-genetic enmities, don't they? It involves a great risk of classifying people in genetic terms (...). J08

The shadows of the past and the possibility of classifying people leads one of the judges interviewed to highlight this possibility and the ethical challenge of not letting it happen. "I think it's necessary to resist to it (...)." J011

Discussion and Conclusions

The Portuguese judges interviewed seem to share some of the concerns that several authors have already mentioned. For the interviewees it appears that the EU is gradually transforming into a "technological zone" (Barry, 2001) in which the Prüm system assumes itself to be like a "selective digital frontier machine" (Van Houton, 2010).

This study, however, reveals that their confidence inside and outside borders takes on different degrees, also revealing the differences between "we" and "them." The analysis of the narratives produced by the Portuguese judges on the implementation of Prüm reveals an inverse relationship between the trust they attach to the work of the actors and authorities during the journey within borders, in contrast to when travelling

beyond borders.

Within the national borders a position of trust is assumed in the work developed by the actors of the Portuguese judicial system. This trust is based in the work developed by the Portuguese police, but also on the guarantees that the Portuguese legal system confers to individuals. Here, we highlight the cautions introduced by Law 5/2008 and, as a more restrictive law, it made possible a greater guarantee of citizens' rights.

Some fears emerge in their narratives, when data travels beyond borders (the “others”), emphasizing their suspicion and the challenges that Prüm represents, in particular, with regard to human rights.

The co-presence of administrative systems with legal systems is, in their view, the driving force of increasing the vulnerabilities of transnational data exchange. Consequently, it may call into question the rights of the defense and the burden of proof, according to them fundamental rights which must be preserved.

The absence of a harmonized European law to deal with the transnational exchange of data can lead to a criminalization of certain groups, as well as leading to their criminalization through administrative practices that are not based on legal instruments. If this is the case, rather than contributing to real data exchange at the transnational level and in combating transnational crime, this instrument will eventually distort justice by creating unknown suspects.

Thus, if Prüm aimed at fighting transnational crime, illegal immigration and terrorism by means of a data-exchange agreement which allowed the various countries to be linked more quickly and with more certainty, it seems, thus far, to end up creating a network of suspicion in which everyone is suspicious of everyone else and where the gaps found in different social, political and legal systems can contribute to an increase in discrimination.

The euphoria expressed by the judges interviewed about the use of DNA technology in criminal investigation and justice within borders, contrasts with a dysphoric attitude and distrust when the exchange of data confronts the "others." The fears demonstrated by the judges interviewed come once again to remit the discussion of the neutrality of these techno-scientific instruments (or their absence). While legitimized by an aura of credibility and scientific legitimacy it can contribute to the growth of inequalities among EU citizens (Plows and Boddington, 2006) and of another type of citizenship - biological citizenship (Rose and Novas 2005), which, based on science, allows the continued practice of classifying individuals and reproduction of social inequalities.

As Leonelli stated the “data journey” implies material, social and institutional circumstances. The changes in the geopolitical framework can be reflected in the technoscientific tools, and therefore, the certainties proclaimed by the use of technological *apparatus* on border control. Even if with harmonized procedures, it can pose new and renewed challenges and new and renewed forms of discrimination, due to

the harmonization of techniques without a harmonization of judicial issues and the particularisms of each Member State.

References

Appadurai, A. (Ed.). (1986). *The social life of things. Commodities in cultural perspective*. Cambridge: Cambridge University Press.

Balzacq, T., Bigo, D. Carrera, S. & Guild, E. (2006). *Security and the two-level game: The treaty of Prüm, the EU and the management of threats.* (No. 234). Retrieved from http://libertysecurity.org/IMG/pdf/WD234_e-version.pdf

Barry, A. (2001). *Political Machines: Governing a Technological Society*. London: Athlone Press.

Bravo, J.R., Leal, C. (2018). *Prova Genética: Implicações em Processo Penal*. Lisboa: Universidade Católica Editora

Charmaz, K. (2006). *Constructing Grounded Theory: A Practical Guide Through Qualitative Analysis*. Thousand Oaks, CA: SAGE Publications.

Clarke, A. (2005). *Situational Analysis: Grounded Theory after the Postmodern Turn.* San Francisco: Sage Publications.

Cole, S. (2001). *Suspect Identities: A History of Fingerprinting and Criminal Identification*. Harvard: Harvard University Press.

Cole, S., Lynch, M. (2006). The social and legal construction of suspects. *Annual Review of Law and Social Science*, vol. 2, pp. 39-60.

Costa, S. & Santos, F. (2019) The social life of forensic evidence and the epistemic sub-cultures in an inquisitorial justice system: analysis of Saltão case, *Science & Justice* https://doi.org/10.1016/j.scijus.2019.06.003

Duster, T. (2004). Selective arrests, an ever-expanding DNA forensic database, and the specter of an early-twenty-first-century equivalent of phrenology. in D. Lazer (Org.). *The technology of justice: DNA and the criminal justice system* (pp. 315-334). MIT Press: Cambridge

Duster, T. (2006). Explaining differential trust of DNA forensic technology: Grounded assessment or inexplicable paranoia? *Journal of Law, Medicine & Ethics*, Vol. 34, no.2, pp. 293–300.

Council of the European Union. 2018a. *Implementation of the Provisions on Information Exchange of the "Prüm Decisions"* (Brussels, 26 November 2018). Accessed January 2,

2019. http://data.consilium.europa.eu/doc/document/ST-5077-2018-REV-5/en/pdf. [Google Scholar]

EU Council (2008[a]). Council Decision 2008/615/JHA of 23 June 2008 on the stepping up of cross-border cooperation, particularly in combating terrorism and cross-border crime. *Official Journal of the European Union*. Available at: http://eurocrim.jura.uni-tuebingen.de/cms/en/doc/1251.pdf.

EU Council (2008b). Council Decision 2008/616/JHA of 23 June 2008 on the implementation of Decision 2008/615/JHA on the stepping up of cross-border cooperation, particularly in combating terrorism and cross-border crime. *Official Journal of the European Union*. Available at: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:210:0012:0072:EN:PDF

Garland, D. (2001). *The culture of control: Crime and social order in contemporary society*. Oxford University Press: Oxford.

Hindmarsh, R. & Prainsack, B. (Org.) (2010). *Genetic suspects: Global governance of forensic DNA profiling and databasing*. Cambridge University Press: Cambridge.

Hufnagel, S. (2012). Harmonizing police cooperation laws in Australia and the European Union: The tension between local/national/supranational interests. *Australian Journal of Forensic Sciences*, 44(1), pp. 45-62.

Kierkegaard, S., (2008). The Prüm decision - An uncontrolled fishing expedition in "Big Brother" Europe. *Computer Law and Security Report*. 24(3), pp.243–252.

Leonelli, S. (2016). *Data-centric Biology. A philosophical study*. The University Chicago Press: Chicago.

Lynch, M. et al. (2008) *Truth Machine: The Contentious History of DNA Fingerprinting*. Chicago, IL: University of Chicago Press.

Machado, H. & Granja, R. (2019), Police epistemic culture and boundary work with judicial authorities and forensic scientists: the case of transnational DNA data exchange in the EU. *New Genetics and Society*, pp.1-19.

Machado, H. & Granja, Rafaela (2018). Ethics in Transnational Forensic DNA Data Exchange in the EU: Constructing Boundaries and Managing Controversies. *Science as Culture*, 27:2, pp. 242-264.

Machado, H., Martins, M. & Santos, F. (2018). O "suspeito genético": Desafios bioéticos da partilha transnacional de informação genetica forense. A.F. Sol & S. Steven S. Gouveia (Eds.) *Bioética no século XXI.* (pp. 315-336), ch.15, Charleston: Create Space Independent Publishing.

McCartney, C. (2006). *Forensic Identification and Criminal Justice: Forensic Science, Justice and Risk*. Cullompton: Willan Publishing.

McCartney, C. (2010). Trans-national exchange of forensic (Bio)information. in: G. Bruinsma & D. Weisburd (Eds). *Emerging Issues in International Forensic Bioinformation Exchange*. (pp. 1-27). University of Leeds, London: Springer.

McCartney, C. (2013). Opting in and opting out: Doing the hokey cokey with EU policing and judicial cooperation. *The Journal of Criminal Law*, 77, pp. 543–561.

McCartney, C. (2014a). Forensic data exchange: Ensuring integrity. *Australian Journal of Forensic Sciences*, 47(1), pp. 36–48.

McCartney, C. (2014b). Transnational exchange of forensic evidence. in: G. Bruinsma & D. Weisburd (Eds). *Encyclopedia of Criminology and Criminal Justice*. (pp. 5302-5131). New York: Springer.

McCartney, C., Wilson, T. & Williams, R. (2011). Transnational exchange of forensic DNA: Viability, legitimacy, and acceptability. *European Journal on Criminal Policy and Research*, 17(4), pp. 305–322.

M'Charek, A., Hagendijk, R. & Vries, W. de (2013). Equal before the law: On the machinery of sameness in forensic DNA practice. *Science, Technology, & Human Values*, 38(4), pp.542–565.

M'Charek, A., Schramm, K. & Skinner, D. (2014). Topologies of race: Doing territory, population and identity in Europe. *Science, Technology, & Human Values*, 39(4), pp. 468–487.

Phinnemore, D. (2013). The European Union: Establishment and development. In M. Cini & N. P. S. Borragán (Eds.). *European Union Politics*. (pp. 26-40) Oxford: Oxford University Press.

Plows, A. & Boddington, P. (2006). Troubles with biocitizenship? *Genomics, Society and Policy*, vol. 2, no. 3, pp. 115-135.

Prainsack, B. & Toom, V. (2013). Performing the Union: The Prüm decision and the European dream. *Studies in History and Philosophy of Biological and Biomedical Sciences*, 44(1), pp.71–79.

Rose, N., Novas, C. (2005). B*iological citinzenship, Global Assemblages: Technology, policies and ethics as anthropological problems*, eds. *Global Anthropology* (pp. 439-463). Blackwell.

Santos, F. (2017). The transnational exchange of DNA data: Global standards and local

practices, in: K. Jakobs & K. Blind (Eds). *Proceedings of the 22nd EURAS Annual Stapndardisation Conference. Digitalisation: Challenge and Opportunity for Standardisation*,. Aachen: Verlag Mainz, pp. 305-322.

Santos, F. (2017), Crime, narrativa e DNA: Os desafios da prova de DNA no processo inquisitorial, *Lex Humana*. 9, pp. 40–67.

Santos, F., Machado, H. & Silva, S. (2013). Forensic DNA databases in European countries: Is size linked to performance? *Life Sciences, Society and Policy*, 9(12), pp. 1–13.

Santos, F., Costa, S. & Machado, H. (2013). A base de dados de perfis de DNA em Portugal: Questões sobre a sua operacionalização, *in S. Costa, S. & H Machado, H. (Eds.). A ciência na luta contra o crime. Potencialidades e limites. Pp. 99.-118).V.N. Famalicão: Húmus.*

Skinner, D. (2012). Mobile identities and fixed categories: Forensic DNA and the politics of racialized data, in K. Schramm, D. Skinner. & R. Rottenburg (Eds.). *Identity politics and the new genetics: Re/creating categories of difference and belonging*. (pp. 53-78). Berghahn Books: New York & Oxford.

Skinner, D. (2013). 'The NDNAD has no ability in itself to be discriminatory': Ethnicity and the governance of the UK National DNA Database", *Sociology,* Vol. 47, n.5, pp. 976-992.

Tofler, E. (2008). Searching for needles in an ever expanding haystack: Cross-border DNA data exchange in the wake of the Prüm Treaty. *Statewatch*, 18 (3), pp. 14-16.

Toom, V., Granja, R. & Ludwig A. (2019), The Prüm Decisions as an Aspirational regime: Reviewing a Decade of Cross-Border Exchange and Comparison of Forensic DNA Data, *Forensic Science International*: Genetics, 41(1), pp. 50-57.

Vuille, J. (2013), Admissibility and appraisal of scientific evidence in continental European criminal justice systems: past, present and future, *Aust. J. Forensic Sci.* 45., pp. 89–397, https://doi.org/10.1080/00450618.2012.738248.

Van der Beek, K. (2011). Forensic DNA Profiles Crossing Borders in Europe (Implementation of the Treaty of Prüm), pp. 1–14 (The Hague: Netherlands Forensic Institute). Available at https://worldwide.promega.com/resources/profiles-in-dna/2011/forensic-dna-profilescrossing-borders-in-europe/ (accessed November 2018).

Wallace, H., Simonelli, T. (2006). Expanding databases, declining liberties, *GeneWatch*, retrieved from: http://www.councilforresponsiblegenetics.org/GeneWatch/GeneWatchPage.aspx?pageId=191&archive=yes (consulted on January 2019).

Wilson, T., (2016). Criminal justice and global public goods: The Prüm forensic biometric cooperation model. *The Journal of Criminal Law*, 80(5), pp.303–326.

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