Ethical-legal problems of DNA databases in criminal investigation

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Abstract

Advances in DNA technology and the discovery of DNA polymorphisms have permitted the creation of DNA databases of individuals for the purpose of criminal investigation.

Many ethical and legal problems arise in the preparation of a DNA database, and these problems are especially important when one analyses the legal regulations on the subject.

In this paper three main groups of possibilities, three systems, are analysed in relation to databases. The first system is based on a general analysis of the population; the second one is based on the taking of samples for a particular list of crimes, and a third is based only on the specific analysis of each case. The advantages and disadvantages of each system are compared and controversial issues are then examined. We found the second system to be the best choice for Spain and other European countries with a similar tradition when we weighed the rights of an individual against the public's interest in the prosecution of a crime.

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Introduction

Advances in DNA technology and the discovery of DNA polymorphisms have facilitated the creation of DNA databases of individuals for the purpose of criminal investigation.¹

Therefore, a considerable range of possibilities have been opened up for criminal investigation, and if we compare the DNA analysis of evidence found at the crime scene (for example blood, hair, saliva, sperm, etc) with the analysis of samples which make up the database, we can locate the possible perpetrator of the crime

Logically, as the number of citizens whose DNA has been analysed and included in a database increases, the probability of locating suspects also becomes greater.

Some European countries have just legislated, or are drafting laws, with the aim of regulating databases. In the United Kingdom, the implementation of such laws is more permissive than elsewhere in Europe and "any recordable offence" can be included in the database. The database has 263,000 entries by now (it was created in 1995) and it is expected that it will eventually contain the data of five million individuals. Whereas, in countries such as Holland, Germany, France or Austria only

individuals who have committed certain serious crimes are included.² In other European countries, there is no legal regulation as yet on the subject but in many of them (ie Spain, Portugal, some Scandinavian countries) specific legislation on this subject is being discussed and it is expected to be produced within the next couple of years. In the United States, the type of crimes included in the database varies depending on the state. In some states many types of crimes and offences are included and in others the database is more restrictive and only contains information pertaining to serious crimes.³

When an individual is being tried for a crime, a blood sample or saliva, which is collected using a small sterile cotton swab, are normally used. There is a huge difference between countries as regards the compulsory giving of a sample where criminal prosecution is concerned. In general, in South European countries, when an individual refuses to submit to DNA testing the taking of a sample by force is not permitted while in North European countries the sample cannot be withheld.

Many ethical and legal problems arise in the preparation of a DNA database and these problems are especially encountered during the analysis of the legal regulations on the subject.

There is general agreement about the fact that research in human genetics can affect the whole community,⁴ and therefore, it is legitimate that the community itself and not only its scientists, should debate and decide what it is prepared to accept or reject.

In this paper, three main groups of possibilities are analysed when dealing with databases. The advantages and drawbacks of each system are compared, and the controversial issues which are raised are then examined:

1. A system based on a general DNA fingerprinting analysis of the population and a conservation of the DNA profile analysis of all the evidence found at the crime scene.
2. A system based on the DNA analysis of samples for a particular list of crimes only and the recording of the DNA profiles of all the evidence found at the crime scene for these particular crimes.
3. A system based only on the specific analysis of a case, the taking of samples from an individual who is known to be connected to a fairly high degree with the crime under investigation, and a

comparison of the evidence which has been collected in this particular investigation.

When discussing the advantages and disadvantages of these systems the following main issues should be considered: individuals who should be included in the database; individual consent to the taking and use of samples; connection which the subject undergoing the test has with the crime under investigation; length of time results remain in the database, and information which an analysis of this kind entails.

1. DNA databases involving analysis of the general population

In order to proceed with the maximum efficiency in criminal investigation, a file would be needed with the genetic fingerprinting of the greatest population span possible.

The procedure would be as follows: At the crime scene the traces and/or biological evidence which the perpetrator of the crime leaves are collected and analysed. By comparing the DNA of these samples with that of the samples stored in forensic laboratories, highly satisfactory results can be obtained in criminal investigation.

The compilation of a general file on the population has the aforementioned advantage, but also presents two drawbacks which must be accepted by the state adopting the system: the first drawback which we have already referred to as characteristic of this "universal" system of databases, is the high economic cost involved. It is necessary to consider whether the outlay for a relatively small area of delinquency is worth it.

It should be taken into account that the analytical cost for each individual included in a database has greatly decreased with the onset of modern technology. However, implementation would demand initial investment in equipment and personnel.

The second disadvantage is the obligatory forced subjection to the carrying out of analysis. This would mean that individuals with no apparent connection to any criminal act would have to undergo analysis.

Theorists have listed a number of rights which may be violated by any bodily intervention. The rights in the following list include those which may be infringed upon by such analyses⁵: the right to privacy; the dignity of the person; the right to physical and moral integrity; the right not to declare; the presumption of innocence; the right to health, and the right to liberty.

We consider however, that violation does not really occur in all the listed cases as we will subsequently explain: **The right to privacy** is defended in the constitutions of all the democratic countries.

In a generic way we can consider privacy as the sphere in which we have the power to exclude third parties. However, this "exclusion of others" could be conditioned in an application of the principle of proportionality in the sense that "each right presupposes respect for the rights of others".

A worrying issue, especially in the area of privacy, is the informative potential which the analysis of DNA entails. Information about an individual's genome implies the most private expression of many endogenous factors which intervene in the confirmation of his/her future, as well as present, state of health. Some 4,000 diseases have been calculated as being hereditary and this could be reflected in the analyses performed.⁶

Legal and specific regulation is absolutely essential with regard to criminal investigation, so that only markers or loci whose alleles are not associated with any kind of phenotypical information are used.⁷ These should only possess an identifying value without providing any medical information whatsoever.

The use of these polymorphisms, which are found in the non-expressive parts of the genes, can provide answers for many of the criticisms voiced in relation to DNA analysis. These criticisms refer to the release of non-identifying information when the appropriate genetic markers are not used.

Any regulation concerning the use of DNA analysis in the legal field should take into consideration the importance of using this type of genetic markers.

In this way many of the problems which arise as a result of the custody of data could be avoided. However, in some DNA databases, not only are the genetic markers stored but the DNA samples are stored as well (ie United Kingdom and Austria). In this case the custody of the samples is crucial. If genetic information became available in the fields of employment or marketing, this medical information, which has been provided under analyses, could be used for means which are completely unrelated to identification. We should consider for example the effects of such information on contracting or on insurance policies.

As regards the **individual's right to dignity**, it is clear that any legislation aimed at regulating DNA testing would establish guarantees for the taking of samples by specialised personnel, under conditions which would ensure that this right will not essentially be infringed.

The right to physical integrity is hardly affected at all by the minor bodily infringement which scientific advances demand in the necessary taking of samples, such as a little saliva or a hair.

However, issues of human dignity and bodily integrity could arise when a state purports to force innocent members of society to donate biological information of any sort. If this argument is accepted, then it could be argued that a universal database would be disproportional to the ends pursued.

The right to health will not be infringed upon either, as testing is to be carried out by qualified personnel.

Among the rights which, according to certain theorists, may be interfered with in the preparation of these databases are: **the right not to declare** and **the presumption of innocence**.

The possible infringement of these rights by the carrying out of tests which involve bodily intervention (X-rays, blood tests, breathalyser...) has been a controversial issue in many countries.

It has been argued with regard to the aforementioned rights that the subjection of citizens through the use of their own bodies to particular scientific methods does not necessarily imply an absolute declaration of guilt. In this sense and with respect to the blood alcohol level test, the Spanish Constitutional Court states that "the suspect is not obliged to deliver a declaration which outwardly expresses guilt, but to tolerate being made the object of a particular kind of test, which demands a minimum of collaboration, not at all comparable to the declaration of guilt".

Those who are in favour of these types of databases stress the fact that the collaboration on the part of the subject in the test does not imply a declaration against oneself, but rather the legally established compliance with a specific type of test, which is practised on the human body.

We have now put forward reasons for believing that the rights which have been outlined are not really violated in the above mentioned situation. However, the same cannot be said with respect to the possible violation of **the right to freedom**. This right can be understood in two ways: in a generic way, as the right not to be forced to do something which we simply do not want to do, and in a more specific way such as the right to freedom of movement. For example, this would be limited at least while the test was being carried out or when transferring the person in question to the appropriate centre.

This right to personal freedom is violated by forced subjection to the practice of the analysis, when the subject opposes the carrying out of the test. This is the first drawback which must be confronted when preparing a database on a general populational level.

Forced subjection implies a disregard for citizens' consent and is therefore a violation of their right to freedom. In this particular case there is a conflict of interests between the state and public interest and the personal and private interest. This conflict of interests exists, to a greater or lesser extent, in all of the systems under examination and this influences the form the different regulations take, depending on whose interest is given preference. However, in our opinion in the case of a universal database system the disadvantages of the infringement of this right are more important than the public interest involved.

Nevertheless, we should not neglect to mention the advantages which a "universal" database entails, as opposed to the drawbacks already analysed. So, apart from the investigating efficiency of the system, from an ethical point of view, the equality of citizens could be one of the selection criteria for the taking of samples. That is, the state would make the taking of samples mandatory for all citizens. The state would then be responsible for

guaranteeing the security, and of course, the greatest possible efficiency, of the criminal investigation.

2. Databases restricted by the linking of a passive subject with a crime, depending on the particular crime under investigation

In the legislation of most European countries the creation of a database comprised of the entire population is considered to be disproportionate to the ends pursued.

The "principle of proportionality" is defined as a general principle of the right which, in a broad sense, obliges the legal worker to attempt to reach a just balance between the interests in conflict. The indiscriminate subjection of a person to the practice of any bodily intrusion is not usually considered to be proportional. Gonzalez Cuellar states quite graphically that: "a physical search of everyone going through a border crossing, in order to check if they are carrying drugs in the interior of their bodies, would not be acceptable".

Taking into account what German theorists call the "principle of proportionality of renunciation", according to the second system, the existence of a specific degree of connection is considered necessary between the crime under investigation and the person being submitted to the DNA test or any other kind of bodily intervention.

According to this system, databases should mainly be made up of samples taken from people who are considered to be closely connected with a particular crime.

Degree of connection

The degree of connection which a person should have with a criminal act, in order to be obliged to give a sample, would be settled legally or else by the examining magistrate in each specific case.

In the so-called settlement by law the degree of connection which the subject submitted to the test should have with the crime, would be fixed.⁸ It would be decided whether mere police suspicions were sufficient, or some open judicial process against the individual should exist, or a formal accusation should be made against the same.

Likewise, once sentence has been passed, the law must establish whether the analyses should be carried out in a generalised way on those convicted of particular crimes, before going on to form part of the databases, or if all those who have been convicted should be tested regardless of the crime committed. Furthermore, it must be decided whether it would be necessary to obtain an unappealable judgment, or if analysis was to be performed after prison detainment.

The second possibility is that the law which regulates databases, instead of establishing a catalogue of people who are obliged to give samples, could establish that it is the judge who should consider the necessity of such a submission. He would evaluate whether the individual is sufficiently connected to the crime and then would

expressly authorise the test for each particular case through the proper judicial authority. This is how it was stated in paragraph 81 of The German Procedural Law of the 7th of January 1975, with respect to all bodily interventions. Subsequently, the Italian Code of Penal Proceedings, passed by the decree of the 22nd of September 1988, states, in articles 244 and 245, that the practice would be agreed on “by means of a decree decided on, when it becomes necessary to establish the source of the traces and the other material effects of the crime”. Articles 171 and 172 of the 1987 Portuguese Penal Procedural Code lay down the precept that “if someone tries to get an exemption or impede any necessary examination, s/he could be compelled by a decision of the legal authority proper”.⁹

Another defining criteria of the second system might be the carrying out of DNA testing for a specific catalogue of crimes. Dutch legislation, since the reform of the Dutch Code of Criminal Procedure, which came into effect on the 1st of September 1994, allows the test to be carried out without requesting the consent of the suspect. The investigating judge can authorise it by means of court order, but only for crimes punishable by sentences of eight years or more. This is also applicable in specific cases such as those involving sexual aggression and serious ill-treatment, when this behaviour carries a custodial sentence of less than six years.¹⁰

Defining in this way makes sense if we are dealing with the compilation of data with hindsight of the indictment of the act. It is possible to deduce from any criminological study that particular crimes exist in which recidivism is much higher. Therefore, certain bodily interventions could be justified after the sentence has been passed, even in cases where the practice of such a test is unnecessary for the investigation of the crime in question.

In good criminological practice, the catalogue of these crimes would not be established on the basis of a given number of years of sentence. The assertion that the crime with the longest sentence has the greatest recidivism is not always true. For example, reoffending is much more common in crimes against sexual freedom than in crimes against life.

Casuistical problems

As can be expected, there are many casuistical problems which, despite detailed legislation, arise with regard to the second system. The principal drawback of the second system is that very objective criteria appropriate to the different judicial principles must be met. The dilemma between the rights to freedom and investigating efficiency obliges us to consider the possibility of a third system which could not, strictly speaking, be called a database.

The reason for wanting databases to be made up almost exclusively of samples obtained from those convicted of crimes with a high degree of recidivism is to identify the perpetrators of future crimes. It is obvious that delinquents who have committed crimes where recidivism is common may reoffend

and it is even more probable that those convicted, once they have served their sentence or indeed even before being captured for the first time, may commit various crimes of the same nature. Therefore, it makes more sense to introduce mandatory testing. This may even dissuade possible reoffenders.

Most European legislatures (Germany, Holland, Austria) have clearly adopted this system. The system approved in the UK is broader and includes a greater proportion of the population

3. A system opposed to the preparation of databases for criminal investigation.

Time of conservation of analyses

One of the principal drawbacks encountered in the second system proposed is the fixing of a time period during which the data should remain in the file before being eliminated from the database.

“Prescription” is the term applied to the practice by which the state decides that a sufficient period of time has passed since the perpetration of the crime, or even since sentencing, such that society has no longer any interest in that crime. Once this period of time has passed, the crime committed cannot be punished, even when the perpetrator is found. The more serious the crime or the more severe the sentence, the longer the period for prescription.

As a result, the elimination of evidence from the database seems logical, once the crime which resulted in the collection of such evidence or its analysis has been prescribed. Therefore, although time may have passed, proceedings may not be initiated against the perpetrator even if s/he appears.

The removal of the analyses of persons who have had their sentences cancelled because of having served the whole sentence, or as a result of the application of penitentiary benefits, should be considered. In these cases, the system should be logical when eliminating the aforementioned data.

In some European legislations, the removal of analyses is carried out without paying special attention to the prescription criteria. However, in some cases an objective period of time is fixed, and once this period of time has elapsed these analyses are eliminated from the database.

Dutch legislation has established the removal of such samples after a thirty-year period and the analysis of evidence collected for investigative purposes after eighteen years.

The same applies when the analysis of a suspect's sample does correspond to the evidence found. This also occurs in the event of the suspect being acquitted in spite of an “identical” DNA match. The elimination of such analyses seems justifiable in all these cases and as a result databases would be only made up of three groups of samples:

- Those samples connected to the judicial investigation in process.
- The analyses of those convicted people who have not had their sentences cancelled.
- Evidence collected when the crime had not been prescribed.

However, it is possible to go even further. If we find evidence at the crime scene and we proceed to check with the database, which has been compiled as described, and discover that the evidence coincides with one of the analyses found in that base, the ethics of the proof should be debated or weighed.

In other words, before the initial sample is taken, the individual being subjected to the analysis must be informed of the accusation which is being made and must be closely connected to the crime in question. If the individual does not consent to the test, a judicial decision is called for. From a judicial point of view, it seems absurd to imagine that once all these guarantees have been introduced for this particular case, this sample can be used for years to come in other proceedings, without the need for consent, information or decisions of any kind.

These are the principal arguments used by the defendants of the third system, which is based on what theorists have termed "the non-utilisation of casual findings".

The report on the ethical and legal problems of genetic manipulation drawn up by the Commission of Legal Affairs and Citizens' Rights¹¹ seems to be based along these lines. The report concludes that according to current North American law, bodily intervention for the purposes of a trial against the persons involved is not allowed. The author of the report also states that the extension of police measures of identification and prevention to include the acquisition of individual genetic characteristics, would lead to an accumulation of genetic data on an ever-increasing number of people in police files. This would be considered necessary as a base for inquiries relating to the legal protection of the data.

The author of the report states that, if it is true that affected persons can request the destruction of these documents, then the greatest protection would be never to register them as data of this kind. However, while it is true that some justification for this reticence is based on the medical data which this analysis involves, as has been demonstrated in this paper, identification can be carried out without the analysis of any further data.

In the third system, personal freedom is being infringed, but to a minimal extent, in that this system involves the forced subjection of the individual to testing only when there is clear proof and indications of close links between the individual and the crime committed.

In principle, this system can be rejected by society on the grounds that it is not very efficient in establishing the perpetrators of crimes which create serious social alarm. None the less it is the only current possibility for those countries which have no legal regulation of databases.

In this way, laboratories authorised to carry out this kind of testing retain the results of the testing, if there is no existing legal order obliging their destruction. Nevertheless, if this series of analyses are not used in a database, they cannot be used for purposes other than those for which they were initially carried out.

Table 1 *Advantages and disadvantages of each system*

First system

Advantages

- High level police efficiency
- The equality of all citizens

Disadvantages

- Forced subjection of all individuals including those not connected to the crime.
- Greater economic outlay

Second system

Advantages

- Analysis of the proportionality between personal freedom and citizens' security.

Disadvantages

- The necessity of very detailed legislation
- Difficulty of international exchange.

Third system

Advantages

- Reasoned order for each bodily intervention
- Increases the possibility of reintegration once the sentence has been served.

Disadvantages

- Minimum efficiency when investigating a crime with an unknown perpetrator.

A specific law is needed when a DNA database is being created. The absence of any specific legislation, in this regard, does not justify the creation of a database by omission of the law because personal rights are involved.

Conclusions

Advantages and disadvantages of each system are summarised in table I.

The decision as to which criteria to use to deduce which one of the three systems is the most appropriate choice could be made on the basis of what German theorists graphically term "the principle of proportionality of renunciation". According to this principle the pros and the cons are compared and analysed to determine whether it is proportional to limit fundamental rights for the greater benefit of society.

The Spanish Constitutional Tribunal has adopted this principle of proportionality, demanding that any bodily intervention be adequate, essential and proportional in a strict sense.¹²

The fifth conclusion of the International Declaration of Bilbao also makes reference to this proportionality.¹³ It establishes that genetic technology applied in matters of personal identification should be restricted to the demands of each specific case, since each specific case can provide more information than is strictly necessary.

It would appear that the second system is the most appropriate and "proportional" for each fundamental right and therefore we would consider it to be the most applicable for Spain and countries with a similar tradition (ie most European countries). The rights of the citizen are not violated under such a system, because the perpetration of a crime has nothing to do with one's freedom to refuse a probative test, that is, a test likely to produce proofs. We have not opted for the third system as it could impede an efficient criminal investigation.

The main drawback of the second system would have to be confronted when regulating this system. Detailed and thorough legal regulation would be necessary and the three following starting points would be necessary:

1. The analysis must always be carried out on non-codifying DNA, which has no kind of phenotypical information and therefore does not provide any data on medical problems. The databases would be created for a catalogue of specific crimes. The criteria for the selection of crimes would be based, not only on criteria related to the seriousness of a particular crime, but would be based primarily on criminological studies about recidivism and to a lesser extent on the sentence imposed. This would clearly appear to justify the use of databases.
2. Forced subjection to the probative practice would be considered proportional when some indication exists which relates the person to the perpetration of the crime. This indication must be evaluated by the investigating judge who would then give a court order for the test to be forcibly carried out.
3. The databases, as outlined in the previous paragraph, would be made up of evidence (from unknown persons) found at the crime scene. It would also include persons who have been convicted by unappealable judgment, for a crime included in the catalogue. This would be the case even when the test is unnecessary for the convicted person in the investigation of the crime in question.

The time for the keeping and custody of the analyses could vary. We do not think that the criteria ought to be an objective number of years in all cases. In our opinion, the ideal criteria will be determined by the cancellation of previous police records in the case of a known and convicted perpetrator. In the case of an unknown perpetrator, the elimination of data would be carried out after the period which gave rise to the prescription of the crime had elapsed.

In any case, once proceedings are concluded, or when the period established by law has passed the legal body must order the relevant laboratory to destroy the data.

Once the guidelines concerning regulation have been analysed, the possibility of an exchange of data at an international level or even the formation of a database at a supranational level could be considered.

The fact remains that the application of the "proportionality of renunciation" would be different depending on the different ethical and legal background of each society. According to this, each state should decide which of these three systems is appropriate for it. Difficulties arise when we try to

homogenise legal criteria for the regulation of databases at an international level. In principle, it is very difficult seriously to imagine an international exchange of data between states which are subjected to different systems, without incurring processing problems and incongruent legal logic.

This is the trial to which the principle of proportionality will be submitted: the confrontation between each state adopting a particular criteria with respect to its own legal principles, and supranational efficiency in criminal investigation. We must bear in mind that delinquency knows no bounds.

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