It Takes Two to Tango: Combining Judicial and Scientific Knowledge to Ensure the Admissibility of Forensic Evidence in the Courtroom

Abstract

Today, crime fighting has become a cross-border matter, which implies that cooperation needs to be intensified. Despite efforts made by both the legal and the scientific community to improve admissibility, each of them departing from their own point of view ‘and consequently the problems they are confronted with’, the lack of coordinated cooperation between both communities has resulted in little helpful action, both with regard to national acceptance and a European “free movement of evidence”. Whereas previous research has shown that regulating the applicable law in case of cross-border evidence gathering does not lead to such free movement, it is regrettable the possibility foreseen in article 82.2 TFEU to develop minimum standards remains shelved by the European legislator. In preparing the much needed legislative action in the field of forensic evidence admissibility, research has shown that the integration of the main reasons for refusal or “fundamental principles of law” implies that the grounds for refusal of evidence are identified within both communities. These were pinpointed on the basis of a literature review and case-law analysis, focusing on the judicial fair balance requirement between the government and individuals involved, and quality requirement of actors involved and actions performed. Subsequently, a sample of the forensic science disciplines was selected, based on the four categories of fundamental principles of law on the basis of which forensic evidence is considered not scientifically and/or legally acceptable. This paper clarifies the reasons for each level of the classification in order to be accepted in both the legal and the scientific community as a representative sample for testing the chances of the future establishment of mutual admissibility of forensic evidence. After developing standards for the gathering and treatment of the forensic evidence for these disciplines, incorporating the four categories of fundamental principles, it will be possible to gradually broaden the scope of free movement of evidence.

Introduction

It is no secret that science and justice rather prefer to stay away from each other as much as possible. Whereas justice is blamed to be ‘living in an ivory tower’, scientists ‘use inapproachable language and techniques’. Mutual recriminations have rarely resulted in fruitful cooperation. With regard to forensic science, the same story can be told. Up to now, both the legal community and the scientific community attempted to overcome the loss of forensic evidence, unaware of (or indifferent to) the reality that the very same goal was also being pursued outside their ‘bubble’. This led to fragmentary solutions within both communities. The attempts of the forensic field to achieve standardization for instance led to the international ISO 17025\(^1\) standard, but also to the European guidelines with regard to the materials tested and the competence of forensic scientists\(^2\). In doing so, the scientific community has certainly improved the obscurity in which forensic evidence is situated. However, this did not lead to overall clarity on the conditions for legal acceptance of forensic evidence, in particular because the standards developed are not mandatory. From a legal point of view, the scientific standards developed have only been legalized to a very limited extent, depending on the need for legal action (which apparently only is present with regard to DNA and fingerprint evidence, taken account of the actions of the European legislator). The lack of both mandatory scientific standards developed have


standardization and legislating has led to growing pressure on both communities to take action and finally make sure that binding standards clarify the conditions for legal acceptance or ‘admissibility’ of forensic evidence.

**Mutual legal admissibility: legislative action and research observations**

**The aim of free movement of evidence**

In the introduction, the lack of cooperation between the legal and scientific community was blamed for the loss of forensic evidence. However, the strive for legal admissibility does not only depend on cross-disciplinary cooperation, but should also be linked with the need to overcome troublesome national legal differences with regard to evidence-gathering rules. Member states have national legal sovereignty, which means they can adopt (criminal) laws in accordance with their own priorities. Therefore, evidence legally gathered in one country would not necessarily be qualified the same way in another. Combined with the increasing number of cross-border crimes, this hypothetical problem became a reality, with loss of evidence as a consequence. Preventing this undesirable development by creating a mutual legal admissibility of evidence has been a goal ever since the Tampere Summit of 1999, where the idea of admitting evidence lawfully gathered in one member state before the courts of other member states was raised for the first time. This logic of ‘mutual recognition’ (MR) has been followed throughout the following years. The strive for a more simplified prisoner extradition in the European Arrest Warrant gave occasion for the first application of the MR principle. In the area of evidence, mutual recognition served as a basis for the 2003 Freezing Order and the 2008 European Evidence Warrant. These two instruments were replaced by the 2014 European Investigation Order, which was created in an attempt to overcome “the (then) existing framework for the gathering of evidence (which was) too fragmented and complicated”. However, linking mutual recognition to the goal of mutual admissibility of evidence has not been achieved so far. The instruments adopted only focus on the mutual recognition of requests or orders to have an investigative measure carried out in another member state with a view to collecting evidence, without ensuring that the requesting member state is bound to accept the results of the investigative measure as evidence.

Despite the good intentions of the legislator, the successful return of evidence from the executing member state to the issuing

member state or legal admissibility thus is not guaranteed. In 2009, the European legislator linked mutual admissibility to the forensic field in the Stockholm Programme and proposed the development of common forensic quality standards, a suggestion that should be seen in the context of the new competences granted by the 2007 Lisbon Treaty. Since this Treaty, article 82.2 of the Treaty on the Functioning of the European Union (TFEU) makes it possible for the European legislator(s) to achieve mutual admissibility of evidence through the adoption of minimum rules. Such minimum standards imply that a common standard is adopted, without depriving member states of their liberty to for instance provide more protection or regulate related topics. Even though this possibility is far more tolerable than applying one or another national regulation for the evidence gathering, and preserves as much legal sovereignty as possible, no further progress has been made to develop such standards, let alone European legal action to impose them.

**Study on the establishment of free movement of evidence**

In order to prepare (or at least facilitate) European legal action in the area of evidence admissibility, a study on EU cross-border gathering and use of evidence in criminal matters was already conducted at Ghent University in 2010 (so even before the adoption of the European Investigation Order). Through questionnaires looking into national legislations on the gathering and handling of evidence, the future of criminal cooperation in this area was investigated. A part of this research focused on the possibility of a free movement of evidence, a concept referring to a system of cross-border having faith in (i.e. admissibility of) the results of investigative measures executed in another member state, where evidence that corresponds to certain conditions is accepted (rendered admissible) in all other EU member states as well.

Though the research’s outcome reveals that the establishment of free movement of evidence is possible, it also shows that member states are still able to refuse the admissibility of evidence lawfully obtained abroad if the gathering of this evidence took place in contravention to their fundamental principles of law. Integrating the fundamental principles of law in minimum standards seems to be the logical next step to establish mutual admissibility of evidence.

**Free Movement of Forensic Evidence**

First things first: identifying the fundamental principles of law to be included in the minimum standards

In view of the bigger (cross-disciplinary and cross-border) picture, cooperation of both scientific and legal experts is necessary to come to mutual legal admissibility, as both the scientific and the legal community lay down requirements of which non-observance can lead to the rejection of forensic evidence. Whereas the acceptance of evidence depends on meeting the quality requirement (of both actors and actions) from a scientific

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point of view, the legal community has traditionally been focusing on the fair balance between the crime-fighting authorities and individuals affected in this context. Since evidence refusal grounds are all covered by the requirements mentioned, it can be said that the successful establishment of a free movement of forensic evidence depends on the integration of these four categories of fundamental principles in the minimum standards. According to the legal community, a fair balance between government and individual is a necessary prerequisite for legal admissibility of the evidence. On the one hand, the (objective) laws of member states grant their national government a certain degree of flexibility in adopting procedural rules. However, these discretionary competences are limited by the traditional 'proportionality principle'. In this respect, the European Court of Human Rights (ECtHR) for instance decided that preservation of DNA samples is possible but cannot be arbitrary or for non-legitimate purposes. On the other hand, if (allowed to be) executed, the forensic investigative measure might affect an individual. In order to consider the criminal proceedings fair, the individual affected by this measure should be granted sufficient subjective or defence rights. Fundamental rights such as the right not to incriminate oneself fall under this scope.

For the scientific community, the admissibility of forensic evidence depends on the quality of the actions performed and the actors performing them. The actions performed are scientific standards, ensuring the reliability of the scientific methods used to gather the forensic evidence. This category covers many actions, ranging from analytical techniques used to gather or examine certain materials to the treatment of the materials tested before, during and after its examination to the interpretation of the findings of this examination. Lack of quality with regard to these actions leads to a questionable accuracy of the forensic results, and the conditions imply that it would not be justified to admit this inaccurate or unreliable evidence in the courtroom. The ‘actors’ who perform forensic analyses or are involved in the forensic actions are both individuals gathering or analysing the forensic evidence and the laboratories or the federations in which these individuals function. The required proficiency (based on education, training and experience) is a prerequisite to ensure the objectivity, and consequently the reliability and admissibility of the evidence.

Reflecting the forensic science community: categorization of forensic evidence

Listing the existing forensic science disciplines: Given the impossibility to develop minimum admissibility standards for every forensic research discipline in this research stage, a selection had to be made. In order to come to a representative sample of the forensic science disciplines, the reason for categorizing them must be kept in mind. In the strive for a free movement of forensic evidence, the elements that seem to be hindering this goal are taken into account. In doing so, the whole forensic science community is taken into account. This led to the following categorization, which will be explained in the paragraphs below Table 1.

Table 1: Listing the existing forensic science disciplines.

<table>
<thead>
<tr>
<th>Identification and/or individualization of persons</th>
<th>Objective</th>
<th>On a person</th>
<th>DNA Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identification and/or individualization of other than persons</td>
<td>Objective</td>
<td>Person involved</td>
<td>Forensic Psychology</td>
</tr>
<tr>
<td>Reconstruction of processes</td>
<td>Objective-subjective</td>
<td>/</td>
<td>Forensic Pathology</td>
</tr>
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The meta level: persons, other than persons, processes: The first step is always the hardest. The same goes for the first subdivision of the forensic community. Even though many classifications exist in both the legal and the scientific community, most of them cannot be considered useful with a view to free movement. Therefore, the classification cannot be based on schemes applied in other sciences such as biology or geology, nor can the legal unconnected evidence classifications in itself (direct vs. circumstantial, expert vs. lay, etc.) lead to a representative categorization. The meta level of the subdivision is therefore based on a traditional ‘partition’ (though not used as such) of forensic science, slightly adapted to (1) make it possible to put forensic disciplines in one meta category and (2) take account of the legal aspects. Some forensic scholarly sources10 mention ‘the three goals of forensic science’, being identification, individualization and reconstruction. Identification leads to class-level information or characteristics, such as colour or substance (what is the object made of), which for instance makes it possible to establish a connection between objects found at the crime scene(s). Individualization lead to uniqueness, meaning that the object concerned can be distinguished from all other objects on the basis of its unique characteristics.11 A research conducted

10 Jalloh V. Germany, Application no. 54810/00, Judgment 11 July 2006.
within the forensic discipline of finger mark identification can for instance lead to class characteristics such as the general pattern, whereas minutiae (minor ridge details) are individual characteristics than can result in individualization of the ‘owner’ of the fingerprints. The same goes for impression/pattern research: whereas shoe mark identification research sometimes only results in class characteristics such as size or manufacturing information, an accidental acquired characteristic such as a cut may lead to individualization.\(^{13}\)

Reconstruction refers to “the ordering of events in relative space and time based on the physical evidence”\(^{14}\). These three goals of forensic science can constitute the first step in the categorization of forensic science disciplines as they cover all forensic disciplines. However, the intention to put every forensic discipline in (only) one category causes that identification and individualization cannot be separated. As mentioned above, several forensic disciplines can namely lead to individualization in one situation, whereas the examination might only lead to class characteristics at another time.\(^{15}\) Identification might also be followed by individualization (depending on whether it concerns class or individual evidence)\(^{16}\). Therefore, identification and individualization are united in one category, which is divided again based on the object/subject of the investigative measure, as legal aspects come into view again here. Whenever the forensic investigative measure may lead to the identification of a person, several defence rights come into play, which is not (yet) the case with (at the stage of) the individualization of non-persons (materials, substances, ...).

No-one would for instance bother that individualizing characteristics of non-persons would be preserved in a database making it possible to identify the substance or material faster in the future. Even more, such databases already exist in certain countries for materials such as bullets or paint. However, when such information may lead to the identification of an individual based on for instance fingerprints or DNA, this is problematic. The attempts to establish DNA databases have already led to several ECtHR judgments, limiting the right to retain the DNA information\(^{17}\), which is not the case for non-persons-information.

The meso levels: objective-subjective, on person-person involved: After dividing the forensic disciplines into one of the three meta categories, the two meso levels come into view. Choosing these meso levels for the further categorization is motivated by the expected differences with regard to the fundamental principles of law. Whereas the division objective-subjective influences the ‘scientific’ fundamental principles, the on person-person involved partition will be of significance with regard to the traditional ‘legal’ fundamental principles. Combined, (the forensic disciplines selected that fall under the scope of) these meso levels will lead to an overview of the essential elements of each category of fundamental principles determining the likelihood of the establishment of a free movement of evidence.

**Objective-subjective:** The objective subcategory refers to the forensic research disciplines that require little interpretation, also referred to as beta disciplines\(^{18}\) or (results in) fact evidence\(^{19}\). The subjective subcategory concerns the gamma disciplines\(^{20}\) or (leads to) opinion evidence. Both cannot be considered opposites, as distinguishing facts from opinions is not always self-evident\(^{20}\). Moreover, drawing inferences from facts such as the results of DNA testing\(^{22}\) cannot be considered ‘facts’ anymore, neither can the conclusion be qualified as subjective or totally depending on the expert. Whereas evidence coming from ‘objective’ forensic disciplines is more likely for researchers to come the same result after examining the same sample, a greater number of dissenting opinions can occur during the gathering of opinion evidence. Scholars\(^{23}\) have made a division between lab disciplines (such as DNA analysis, toxicology, drug analysis), which they believe to be more analytical and disciplines based on expert interpretation of patterns observed (such as fingerprints, tool marks, writing samples), which would be more subjective.

Illustrations to demonstrate that the proficiency of the actors involved plays a far greater role when the ‘leap of faith’\(^{24}\) that needs to be made is larger are countless. Within common law jurisdictions, several acts have forbidden non-experts (meaning with no academic background, despite experience in the field) to give opinion evidence.\(^{25}\) Moreover, when assessing the reliability of the forensic opinion evidence such as forensic mental health evaluations, research shows that several factors influence the expert’s opinion, and therefore that the likelihood

\(^{13}\)C. Champod, “Overview and meaning of identification/individualization” in M.M. Houck (ed.), *Professional issues in forensic science*, (95) 95.


\(^{15}\) For instance, one might say that a hair examination leads to the conclusion that a hair came from a Caucasian woman, or that it came from the suspect.

\(^{16}\) L. R. Netzel, TF. Kieley and S. Bell distinguish reconstruction evidence and association evidence. Association evidence is further divided into class evidence (meaning that class-characteristic evidence does not reference a specific person) and identification evidence (which does).

\(^{17}\) S. and Marper v. the United Kingdom, Application no. 30562/04 and 30566/04, Judgment 4 December 2008.


\(^{19}\) I. Freckelton, “Evidence/Classification” in M.M. Houck (ed.), *Professional issues in forensic science*, (265) 268.


\(^{22}\) C. Champond, “Overview and meaning of identification/individualization” in M.M. Houck (ed.), *Professional issues in forensic science*, (95) 95.


of differing opinions is much larger. Questioning the expert’s competence to provide this opinion becomes more relevant then. This need can also be illustrated by the practical guides issued in the area of rather subjective disciplines in order to provide a clear competence basis. Keeping in mind the Daubert-test for reliability, it is also logical that, whenever it is harder to judge the reliability of the opinion evidence on the basis of a scientific validation of the methods used, the competence of the expert will be of greater importance (an observation that can also be linked with the greater likelihood of differing opinions mentioned before).

On person-person involved: In contrast to the first meso level, the meso categories ‘on person’ and ‘person involved’ are based on a significant difference with regard to legal fundamental principles. Line further explanation is required whereas some of forensic investigative measures are executed directly on (the body of) a person (‘on person’), others are not (‘person involved’).

The latter should be distinguished from the identification/individualization of persons’ meta level, in the sense that the meta level only considers the intermediate goal of the forensic research. Intermediate, because the ultimate goal of all forensic sciences is of course the identification of the person who committed the crime. However, it must at all times be kept in mind that forensic sciences are merely technical, i.e. established to answer a scientific question, whereas ultimately the judge or jury (and thus never the forensic scientist) will decide whether someone is guilty or innocent. It is self-evident that the forensic investigative measures executed on a person are subjected to far more limitations with regard to privacy. As mentioned before, retention of personal data has been questioned multiple times before the Court. This clear difference with regard to the right to privacy cannot be further extended with regard to the right to a fair trial (article 6 ECHR). Whereas the Court has for instance decided in Jalloh v. the United Kingdom that the right not to incriminate oneself is applicable with regard to drug obtaining, the same fundamental right cannot be invoked when the obtaining of certain materials from an accused person such as blood or urine is done for the purpose of DNA testing. Whereas the right not to incriminate oneself is applicable with regard to drug obtaining, however, this does not mean that the execution of an investigative measure on a person never leads to clear differences with regard to article 6 defence rights. This can be illustrated by the Belgian DNA analysis legislation: whereas the DNA analysis on a (at least sixteen year old) suspect should be preceded by a written permission, can only be executed by persons with a certain qualification and other procedural guarantees, such as the right to a counter expertise, the suspect will only be granted (or at least should be granted) the right to counter expertise whenever this DNA analysis is executed on a person other than the suspect, but this analysis leads to the suspect, in order to ensure his defence rights (as the samples are generally destroyed after six months).

The micro level: specific forensic research disciplines: After dividing the forensic sciences in meta and meso categories, representatives were chosen. In doing so, several criteria were kept in mind. First of all, the selected forensic research disciplines had to belong to one (and only one) meta and meso category, in order to avoid indirect influences on the standards. However, it was kept in mind that a forensic discipline that can be put in different ‘groups’, such as DNA analysis, can also gain more insight in the influence of the meta categories on the minimum standards. Secondly, the selected forensic research disciplines cover both disciplines that have already (partly) been included and national legislations and disciplines that remain to be exclusively dealt with in beta and gamma scientific literature, in order to be able to identify possible influences. Whereas forensic handwriting analysis is a quite contested discipline, not subjected to binding legislation, forensic pathology is traditionally embedded in national regulations. Thirdly, inter-comparability of the selected research disciplines (see difference with regard to right to remain silent) is a plus. Whereas traditional ‘traces’ disciplines such as hair, fibres and textile examination refer to disciplines where evidence is collected at the crime scene, forensic psychology, though intended to find out the thoughts of the suspect at the moment of the crime, this evidence is ‘collected’ later in time, which might cause different protection mechanisms. Forensic psychology was also preferred over forensic psychiatry on the basis of the mental condition of the person involved. As the use of the forensic psychiatry science might imply that a person is not criminally liable or at least not equally liable as a ‘normal’ person, a number of specific safeguards might be applicable.

Conclusion

In recent years, more and more attention has been paid to the cross-border gathering and use of evidence in both scientific and legal communities. Even though this awareness has only been used to regulate the cross-border gathering of evidence so far, the time seems right to extend these legal actions to the subsequent transfer of the evidence and its use in the courtrooms of other member states. The necessary basis for legal action, being the development of minimum standards, is already present in article 82.2 TFEU. Developing minimum standards however

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28 L. R. Netzel, TF. Kiedy and S. Bell, “Evidence Origins, Types and Admissibility” IN S.H. James, J.J. Nordby and S. Bell (eds.), Forensic Science: An introduction to Scientific and investigative techniques, Taylor & Francis Group, Boka Raton, 2014, 24-37. It should always be kept in mind that forensic sciences are merely technical, i.e. established to answer a scientific question, whereas ultimately the judge or jury (and thus never the forensic scientist) will decide whether someone is guilty or innocent. It is self-evident that the forensic investigative measures executed on a person are subjected to far more limitations with regard to privacy. As mentioned before, retention of personal data has been questioned multiple times before the Court. This clear difference with regard to the right to privacy cannot be further extended with regard to the right to a fair trial (article 6 ECHR). Whereas the Court has for instance decided in Jalloh v. the United Kingdom that the right not to incriminate oneself is applicable with regard to drug obtaining, the same fundamental right cannot be invoked when the obtaining of certain materials from an accused person such as blood or urine is done for the purpose of DNA testing. Whereas the right not to incriminate oneself is applicable with regard to drug obtaining, however, this does not mean that the execution of an investigative measure on a person never leads to clear differences with regard to article 6 defence rights. This can be illustrated by the Belgian DNA analysis legislation: whereas the DNA analysis on a (at least sixteen year old) suspect should be preceded by a written permission, can only be executed by persons with a certain qualification and other procedural guarantees, such as the right to a counter expertise, the suspect will only be granted (or at least should be granted) the right to counter expertise whenever this DNA analysis is executed on a person other than the suspect, but this analysis leads to the suspect, in order to ensure his defence rights (as the samples are generally destroyed after six months).

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26 Saunders v. the United Kingdom, Application no. 19187/91, Judgment 17 December 1996, margin no. 69.

27 See article 44quinquies § 1 Code of Criminal Procedure.

28 See article 44sexies § 6 Code of Criminal Procedure.

29 See article 44sexies § 2 lo. 44quinquies § 9 Code of Criminal Procedure.
poses a particular challenge with regard to forensic evidence, as both the fair balance requirement (a desire shared with regard to all investigative measures) and the quality requirement (characterizing the forensic science community) need to be integrated to ensure admissibility of the forensic evidence. In order to develop minimum standards for the forensic sciences that can be considered representative for the entire forensic scientific community, the sector was divided into meta, meso and micro categories. This categorization attempts to comprise disciplines that are both comparable and diverse, in order to identify and counter every legal or scientific condition that might cause non-admissibility of the forensic result elsewhere. In this manner, the first steps towards a free movement of forensic evidence can (finally) be taken.