Current methods in forensic speaker identification: results of a collaborative exercise

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The field of forensic speaker identification suffers from a wide array of methods that are employed and a lack of evaluation and validation of these different methods. While all methods may have their own strong points and drawbacks, a clear view on the performance of each of these methods under various forensic conditions is still wanting. Moreover, due to the fact that the expertise involved in most types of speaker identification analyses is language-specific, it is impossible to design a performance test that is both internationally oriented and fair.

In 2003-2004, the possibility of constructing a fake case which was to be analyzed and reported on by as many experts as possible was investigated, preferably using a representative set of the methods that are currently being used in the field of forensic speaker identification. This would be the first internationally oriented collaborative exercise in this field. The aim we had in mind was not to evaluate the accuracy of these methods, since they are in many ways not directly comparable, but rather to document the different methods, analyses and reporting strategies that are used by experts in the field and to gain a broader and deeper insight into the field of forensic speaker identification in its entirety. Members of the IAFPA and members of the Forensic Speech and Audio Analysis Working Group of ENFSI (European Network of Forensic Science Institutes) were invited to participate.

In 2004, a fake case was constructed at the NFI with English material that was recorded especially for this purpose. Twelve anonymous participants, employed by forensic laboratories, universities, police labs, the military etc. or working as private experts, and coming from ten different countries within and outside of Europe, worked and reported on a forensically realistic case. The reports were received back in 2005, translated to English if necessary and analysed at the NFI. The group of twelve participants include two that employ a fully automatic system, five that use an approach that is often referred to as ‘auditory-phonetic’ or ‘phonetic-acoustic’, and five that use a method that does not fall in either of these categories, but may be called semi-automatic.

In this paper, the design of the fake case will be described, and a summary of the results from twelve reports will be presented anonymously. Furthermore, some examples will demonstrate the large diversity that is encountered in these reports on virtually every aspect of the examinations.