

Erzsébet Balláné Füzster

National University of Public Service Faculty of Law Enforcement

POSSIBILITIES OF PERSONAL IDENTIFICATION

The importance of personal identification is indisputable as it is essential to be able to distinguish one person from another.

The problem of personal identification has now grown far beyond the scope of criminalistics and has become a social issue. Recently, as the result of massive migration, the identification of masses has become a new challenge to deal with.

There are various situations in life in which somebody either cannot or does not want to reveal who they really are:

- criminals often consciously try to hide their identity,
- determining the identity of unknown corpses is an important duty of authorities,
- establishing the identity of persons who are unable to provide sufficient information about themselves (e.g. individuals suffering from intellectual disability, the elderly, the severely ill, children, etc.) is also an important issue.

Screening people who may pose as a threat to the security of a certain nation (e.g. to prevent terrorist attacks at airports) is something that has become primordial and of public interest since September 11, 2001.

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With the intensification of migration, the only possible way to determine whether a person who crossed the border is eligible for a refugee status or not (i.e. the person is really from the region where they claim to come from) is to establish their identity and nationality.

Even in our everyday lives, personal identification is necessary to prove access rights in order to utilize our bank accounts, personal data storages, IT systems and financial systems. To have physical access to certain places (e.g. vaults in banks, closed wards in psychiatric hospitals, laboratories, etc.), accurate identification is required to filter unauthorized people. Without proving one's identity, further rights may not be possible either e.g. driving a car or possessing an arm. Proof of affiliation to various organizations, the authorities or certain companies (e.g. healthcare officers of the Red Cross, police officer in civilian clothes, etc.) is equally of social importance.

In healthcare, the identification of patients, especially in case of patients who are unable to communicate or are delirious, is of paramount importance to prevent "patient exchanges", not to mention the situation of finding patients that have absconded.

The growing use of online administration raises the urgent issue of secure e-signatures, e-identification (eID) and e-authentication.

Personal identification is possible because there are no two people in the world who possess the same biological characteristics (quantitative and qualitative) and personal data at the same time.

The issue of identity is almost as old as human society. It took a long time to develop our current methods of identification; the previous procedures were much less effective or humane.

In slaveholding societies, it was natural for the slaves to be stigmatized, i.e. to simply punch the name of the person to whom they belonged to in their

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skin. Protecting the property of the slaveholder was far more important than establishing the identity of the slaves themselves.

Countless forms of stigma were used in the Middle Ages and even the New Age. In France, the Bourbon lily was burned on the convicts' shoulders and galley slaves were marked with fiery iron. Stigma often served not only as recognition but also as punishment.

The old Hungarian codes applied almost all types of mutilation. The laws of King Saint Stephen² condemned sinners by cutting off their hand and slanderers by cutting off their tongue. In early feudal law, the object of punishment was to stigmatize servants who had stolen. The first theft resulted in cutting off the nose, while the second theft was preceded by cutting off an ear.

By the beginning of the 19th century, the significant increase of the population of large cities and the growing prevalence of crime made it impossible to identify reoffenders, fraudsters and conmen due to the common use of pseudonyms. Personal descriptions of criminals and criminal records including photos (after the discovery of photography) soon became an unmanageable pile of miscellaneous information³.

The first scientific method of identification was based on anthropometric foundations. The theoretical basis of the identification and registration system set up in 1879 by a French police officer, Alphonse Bertillon⁴, was the well-known biological fact that after the age of 21 (with the exception of some very rare cases), the size of human bones did not undergo any significant change.

The method called *bertillonage* was based on 11 dimensions taken from the human body: 1) height; 2) distance between arms spread; 3) sitting height; 4) head length; 5) head width; 6) length of the right ear; 7) face width; 8) length

² First Hungarian king, ruled between 997-1038

³ E. Balláné Füzster: *Kriminalisztika*, Dialóg Campus Kiadó, Budapest, 2019. ISBN: 978-615-5945-98-4.

⁴ Alphonse Bertillon, former head of the Paris Identification Office, developer of the anthropometric registration system named after him

of the left leg; 9) length of the left middle finger; 10) left little toe, and 11) length of the left forearm. These measurements were registered for each individual and could be retrieved from the records later on if necessary.

Bertillon's method, despite being relatively difficult, was revolutionary and very useful as it temporarily resolved one of the most important issues law enforcement faced at the time: the effective identification of offenders and the recording of their data. The system also included a two-way photograph (mugshot) of the suspects.

The reason for the temporary nature of this method was basically due to two factors. Firstly, it arose from the mathematically predictable fact that, if 11 sizes were included, the statistical probability of finding two persons whose 11 sizes were the same was 1: 286 435 456. That is, in a population bigger than 286 435 456, two individuals may have the same parameters⁵. Secondly, as there are only a few countries with an adult population larger than 286 435 456, a more significant obstacle has been the fact that records containing too many personal data became hard to manage.

The identification procedures used today can be divided into three major groups:

- knowledge-based identification: the individual is in possession of an information that can be verified during the identification process. Such information can be a password, a PIN code, etc.
- property-based identification: the person owns an object that proves their identity (e.g. identity document, barcode wristband, badge) or which allows them to access, enter or claim certain rights (e.g. magnetic cards and keys).

However, an infallible determination of the affiliation between the document and the person using the document in question is only possible based

⁵ J. Thorwald: A detektívek évszázada, <http://adamobooks>, 2011. EPUB ISBN: 978-615-5184-39-0

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on biometric data and the use of biometric identifiers. In only these cases can we speak of clear identification.

- biometric-based identification: based on the philosophical finding now accepted as a fact, that all things that exist, and as such every person, is unique and unrepeatable.

Biometric identifiers can be defined as a set of physical and/or behavioral traits that can be examined to verify one's identity. The primary purpose of biometric identification is to develop security systems and personal identification documents that recognize an individual based on their personal characteristics.

The so-called active identification procedures require the active participation of the person in order to be identified (e.g. saying or describing a specific text). In so-called passive identification procedures, the involvement of the person is only necessary to allow sampling (e.g. the use of a fingerprint scanner for fingerprint identification).

Nowadays, the most commonly used biometric-based procedures are: voice/speech identification, handwriting identification, gait dynamics examination, hand and face geometry examination, facial thermography examination, retinal identification and iris recognition, tooth identification, fingerprint examination and palmprint identification, as well as genetic fingerprinting which is the current "miracle weapon" in forensics (i.e. identification based on the comparison of DNA profiles by expert examination of the oral mucosal swab taken from a person). The aforementioned biometric features may be suitable to create a registry database that can be used for identification purposes based on the comparison with the stored data.

Identification on the basis of teeth (dental status) takes place primarily when establishing the identity of unknown corpses, provided that the deceased person's dental records are available. The shape of different body parts, e.g. ears,

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forehead, lips can also be suitable for determining the identity of a person; in forensic practice, perpetrators are often identified this way. Identification based on X-rays is required primarily in case of unknown corpses, provided that there is access to X-rays taken earlier.

The so-called special criminalistic means of identification should be also mentioned, including procedures that are used exclusively for criminal purposes. The electronic Modus Operandi Register (eModus) includes mugshots, a photographic and descriptive register of tattoos, a personal description including information on the location and characteristics of special features and a register of pseudonyms and nicknames.

During classical identification based on a photo, it is also possible to involve an expert (forensic expert) to decide whether the two different photographs were taken of the same person or whether a photograph had been taken of a person of unknown identity.

Video and IT-based facial recognition technologies used by the police and other authorities to monitor the population have only existed in science fiction in the last century. Today, this has become a reality in many countries around the world. With the development of infocommunication, a person can be picked out from a crowd of thousands with the use of appropriate cameras, specific softwares and facial recognition algorithms. According to a survey by Algorithm Watch⁶, the authorities in most EU member states are already using this technology and if they are not already using it, they plan to introduce it in the near future.

Using facial recognition software, you can quickly and safely identify individuals who are unable or unwilling to identify themselves during a police identity check. The photo taken during the verification process can be checked right away in the electronic face recognition system by the police officer.

⁶ <https://algorithmwatch.org/en/story/face-recognition-police-europe/> (Accessed: 09. 25. 2020.)

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Face recognition can be used to find a missing child or to spot violent supporters in a football stadium. Using drones equipped with cameras, large areas and masses can be checked relatively quickly. By analyzing the images, it is possible to find certain people and determine the identity of unknown or suspicious persons⁷.

Face recognition as a biometric identification method is showing great development in Hungary. The main field of activity of the Section for Facial Recognition Analysis operating within the Hungarian Institute for Forensic Sciences is image analysis performed on the basis of official requests to identify unknown persons⁸.

Face recognition is not exclusively used in criminal investigation or for law enforcement purposes. Unlocking smartphones and laptops with biometric sensors is already a reality today.

Finally, it is important to state that this technology is far from perfect, there are a lot of false identifications, not to mention the emerging of so-called "deepfake", i.e. the production of manipulated videos and images.

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Key words: personal identification, biometric identifiers, active identification procedures, passive identification procedures, facial recognition

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