

Scent identification evidence in jurisdiction (drawing on the example of judicial practice in Poland)

Tadeusz Tomaszewski*, Piotr Girdwojn

Warsaw University, Faculty of Law and Administration, Krakowskie Przedmieście St. 26/28, 00-325 Warsaw, Poland

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Abstract

One of the most significant challenges for contemporary forensic science seems to be research of new sources of physical evidence. Particularly after successful implementation of revolutionary DNA identification law enforcement agencies look for other new and perhaps more efficient techniques.

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A research on osmology (as it is called in Poland) or scent identification evidence has been conducting for some years. Its goal is determination, whether dogs can compare and recognize 'scent traces': the one left by perpetrator on a crime scene, the another taken from the defendant. The results are not unanimous, however. On one hand they confirm that a dog has more sensitive nose than a human being, on the other hand they do not render any scientific data useful to establish how precise, reliable or valid might be the kind of identification of the suspect, if it is at all.

We do not want to argue with adherents nor opponents of the method. Our paper is based on a comparative analyse of jurisprudence from USA, Holland, Germany and Poland. The sentences establish some rules as to the method, concerning a.o. conducting of identification, its validity or criteria of establishing. Basing on the national jurisprudence we would like to submit following matters for consideration:

1. Is the dog scent comparison a common kind of suspect identification?
2. Can courts believe in that kind of identification and why?
3. Does the dog scent identification meet the scientific evidence criteria?
4. What is the future of the method?

Particular skills of police dogs are commonly known, and these are police patrol or tracking dogs, who become frequent heroes of media coverage from scenes of crime – both volume crime (such as burglaries) or the latest terrorist attacks. For several years these outstanding skills have been attempted to be utilised also in scent identification – the phenomenon which, on the other hand, arouses a series of questions not only in relation to actual dog capabilities, but also in terms of diagnostic value of such examinations and possibilities of evidential use of their findings.

Court jurisdiction, which particularly visible in Polish practice, perceives the problem in two aspects. The first one, being historically older, is admissibility of the use of tracking dogs (unquestionable in Polish legislation), and its younger offshoot—the acceptance of scent identification by a dog as incriminating or exonerating evidence.

In the US the fact of a dog leading to a suspect basing upon scent traces (*tracking* or *bloodhound evidence*) has been rather widely acknowledged since as early as the beginning of the 20th century [1], although in some States relevant decisions were not taken until the second half of 1980s [2], whereas in others—such an option remained by no means unaccepted [3]. Therefore, it becomes obvious that in these systems the admissibility of scent trace identification simply cannot take place. Jurisdiction of remaining States basically admits such a possibility, however conditioning the probative value of evidence on a due demonstration of a dog's aptitude and not attributing scientific character to these examinations [4].

* Corresponding author. Tel.: +48 22 5524317; fax: +48 22 5524315.

E-mail addresses: tadtom@wpia.uw.edu.pl,
pgird@uw.edu.pl (T. Tomaszewski).

In the Netherlands, scent identification by dogs has been recognised since the beginning of the 20th century [5], however it was initially constrained to the use of tracking dogs. The study of several court decisions of the last years implies a remarkable reevaluation and presently, bloodhound evidence is as a rule, undisputably accepted by the Dutch Supreme Court [6], although practice of conducting these examinations in Holland significantly differ from the Polish one.

In turn, a relatively high caution in relation to scent comparative examinations is expressed by German courts, which admit such examinations – for the time being at the land level. While the results of such examinations can be treated very carefully – maximally as a circumstantial evidence, the issues of scent traces are being slowly introduced to German publications in the area of forensic science [7].

In Polish doctrine, scent identification has lived to appear in a prolific literature which studies this problem both from forensic and lawsuit perspectives [8]. The hereby paper presents the summary of several year experiences of Polish courts whilst taking into account major doubts, which have arisen on this occasion.

One of the first problems faced by Polish courts in the past was to determine in what procedural form the scent identification should be carried out, as there was quite a freedom in this respect at the onset of practical application of scent identification in Poland [9], which translated into the determination of evidential usability of such method. As a consequence, the results of scent identification were initially recognised only as a circumstantial and not quite powerful, evidence [10].

In turn, Polish scent identification, also referred to as osmology, was progressing quite vividly, which forced the courts to assume a certain position towards the wide-spreading method. This process took place in three major directions:

1. to identify a uniform procedural form of research activities, which would be;
2. accepted by both theoreticians and practitioners;
3. to determine conditions to be met in order to ensure a method's reliability;
4. to answer the question on probative value of scent traces.

Doubts in relation to procedural form of such examinations had not been solved until the ruling of the Supreme Court in Poland of November 11, 1999, whereby it was clearly concluded that “Scent trace examination should be carried out in form of expert casework” and “be completed with an expert report . . .” [11] In other rulings, the Supreme Court quite rigidly determined also the responsibilities of expert witness to perform examinations [12].

Courts faced (and actually are still facing) many more difficulties in determining the conditions to be met to ensure reliability of examination (expert casework). The lack of reference to other identification techniques made the courts determine reliability criteria on their own, which later were often critically assessed in scientific terms. A thorough discussion of all implications pointed out by courts is

impossible, however courts put a pressure on correctness of detection and recovery of evidential material and collection and selection of comparative (reference) material (for elimination purposes) on one hand, and on the other—they focus on methodology of carrying out the examinations (among others: number of attested dogs utilised, type of main and control trials used). As the outcome of several year experiences, Polish judicial practice elaborated the following criteria of carrying out scent examinations:

- (a) prerequisite of duplication of examinations (i.e. two-fold performance) [13];
- (b) obligation of having a dog attested [14];
- (c) elimination of suggestion by, among others: selection of a suitable group of comparative traces, absence of dog handler.

An interesting trend can be also noted in jurisdiction on probative value of scent identification. Initially, positive results of scent examinations were attributed a circumstantial value only [15], however since the recognition of these examinations as expert evidence, their probative value has substantially, although sometimes disproportionately grown, which was demonstrated for instance in conviction that scent examination evidence can be the only incriminating evidence sufficient for proving a defendant guilty [16].

On the other hand, after several spectacular cases, whereby the manner of carrying out a specific identification had been questioned in addition to a high diagnostic value of scent examination, the conviction as to a great influence of results of such examinations on judicial decisions has declined. Polish courts lay a particular stress on the treatment of scent examination findings as a circumstantial evidence; among others, they point that a positive identification can only attest a contact between an individual and a specific object, however does not provide for a direct proof of defendant's guilt; they further underline that scent casework should be evaluated – similarly to other evidence – in relation to complete evidential material in a case” [17]. The court directly claimed in one of its sentences that “So far, a scent evidence has not provided such a certainty which can be derived, for instance, from fingerprint or DNA examinations, and hence the need of preserving a high dose of precaution in judicial decisions while basing sentences exclusively on scent evidence. Whilst avoiding dispraisal, this type of evidence should *in concreto* be subject to a penetrating and comprehensive analysis with due respect to other evidential material” [18]. Recently, some judicial decisions have been encountered, which attest the increased reservation of courts in relation to scent identification [19].

The evaluation of this trend cannot be unambiguous. Forensic science doctrine does not appear to strive at elimination of scent identification from an array of research methods, but only postulates drawing of proper inferences performed identifications.

A basic argument which makes the assessment of reliability and actual probative value of scent examinations more difficult is the fact that matching reference and casework scent samples

is not done by means of instrumentation, whose accuracy can be measured by applying the principles of physics, but rather on the basis of observation of previously learned animal behaviours. Although the latter does not seem to be questionable, which has been justified by the US court rulings which acknowledged the observation of instinctive behaviours as the evidence, such as chicken following the first object they see [20] or a cow returning to barn [21] due to the fact that they represent a symptom of long ago observed rules of nature. On the other hand, in relation to unnatural behaviours, acquired via training by humans, a doubt as to correctness of research methodology described in American doctrine as *validity* may arise. Having accepted that a dog demeanour – described at the onset of examination by its handler – sufficiently expresses making an observation by a dog, one should ask about the level of a diagnostic value of this dog's indications, whether the observation is synonymous to identification and if so, what exactly dog identifies and how categorically.

The performed studies allow for a merely objective and accurate answer to the first question only. In the light of knowledge principles and life experience, one should unquestionably accept that dog is able to recognise other beings by scent deposited on various backgrounds. On the other hand, the accurate rate of indication error remains unknown and experiments allowing to infer this rate, did not bring about particularly impressive results. Findings of Dutch experiments, published in 1998, and conducted under conditions similar to a real case scenario, allowed for formulation of a very careful thesis on the potential for further examinations, as only 21% indications were correct [22]. Far better, though not particularly optimistic results were obtained by British scientists, however the experimental procedure was different from the protocol used actually by the police [23].

An answer to the question on the causes of errors in scent identification seems to focus on three issues: similarity, earlier suggestion or faultiness at the stage of dog training. Paradoxically, a cliché of a well-developed canine olfactory memory, which probably constitutes a source of conviction on a high evidential value of scent examination, does not necessarily support the thesis on a high diagnostic value of presented method. Durability of olfactory memory does not always translate into correctness of retrieving from a memory. Erroneous identifications can also derive from mistakes made at the stage of dog's training or in a method of conducting the trial, which has been described as “clever Hans” effect.

The risk of occurrence of the above errors in scent trace examinations is unknown, whereas used protocols are to eliminate potential risk to ensure a possibly categorical identification. This is achieved by recommended in Polish methodology: examination of scent attractiveness, a proper construction of identification line-up and unawareness of sample distribution (arrangement) by a dog handler. Particular difficulties occur in relation to a selection of proper scent samples for comparison (matching). Failure to fulfilment of at least one condition affecting the correctness of results leads to rejection of findings.

On the other hand, even if we accept, despite doubts pointed above, that a dog's demeanour suggests a scent identification

and the rate of wrong indications is known, than an object being identified has not been precisely defined. “Scent trace” term should be considered as exceptionally vague. Hitherto research on sense of smell in mammals clearly demonstrates that that physiology of this sense has not been sufficiently explored yet, which imposes certain precaution in evaluation of scent examination results [24]. It is known that olfactory sensations are of a complex and subtle nature. Olfactory sensation is the outcome of interaction of many substances and even the smallest fluctuations in their concentration can evoke different sensations, whereas a stimulus effects many receptors simultaneously. At the same time, it has been underlined that miscellaneous components make up the human scent and they are both of durable, i.e. environmental (profession-related, e.g. butchers' scent is particularly attractive to dogs), physiological (diet, alcohol or drugs-driven) as well as of transitory (e.g. use of cosmetics) character. Therefore, it seems difficult to create such examination conditions as to ensure that a dog who indicates a sample is not driven by a similarity of environmental or physiological factors, although experiments conducted by the Polish police seem to suggest that sex, smoking habit or cosmetics used are not attractive for a dog [25].

The problem of invariability of scent trace, although not studied in-depth—is essential from the perspective of probative value of scent trace examinations. The fact that the nature of trace has not been entirely explored, does not permit to assess neither the potential likelihood of scent variability nor determination of the degree of such changes.

The argument in favour of trace variability is the fact that dogs in experimental conditions react differently on traces of various age, which could incline to admitting that dogs are in a way capable of distinguishing the last feature.

Trace variability in time has its significant forensic and procedural consequences. It is relevantly pointed out that the use of traces in identification line-up, which originate from the so-called “scent bank” can explain the fact why a dog indicates a scent material collected from a suspect (being the only fresh one) [26].

When accepting a hypothesis on the uniqueness of human scent as a true one, one should consistently include this trace to the category of biological traces. The substances excreted by human organism would constitute a fundamental source of scent. Meanwhile, scent storage conditions (i.e. in tightly closed jars – according to Polish research methodology), without cooling for instance, when applied to other types of biological traces – would certainly lead to their degradation, often resulting in their elimination or categorical conclusions being significantly weaker [27].

One should also note that a dog – a kind of living “analytical instrument” – *ex definitione* does not ensure repeatability of results which is a precondition of their reliability. Naturally, the use of technical instrumentation is also burdened with a certain error rate, however this can be rather precisely estimated. One of the rules of Polish examination methodology commands carrying out a control trial, which aims at determination whether a dog is able to work on a given day, and basing upon that one can presume that it does not happen as a rule. What

criteria are used to assess a dog fitness to work and whether these are only objective and measurable (physiological) aspects which affect this condition, is still uncertain. Furthermore, findings of Settle et al. quoted earlier, demonstrate that dogs' health is an essential factor (clear decline in number of correct indications during infection), however during the course of examinations the same or even worse dog's disposition was noted, whose origin could not be explained [28].

To sum up, the analysis of Polish jurisdiction in the area of scent identification in the last few years leads to the following conclusions:

1. Attributing form of casework in form of expert opinion to scent identification represented a significant shift of dimension in judicial practice.
2. Basing on the example of scent identification, one can see the benefits from a tight relationship between jurisdiction and doctrine. A critical assessment of rulings, presentation of theoretical doubts, while demonstrating huge practical benefits of using the method—allow to find a pertinent evidential value of scent examinations (i.e. taking into the account diagnostic value) and tailoring the effectiveness of proceeding to the safeguards of abiding the law.
3. Findings of empirical examinations, as well as a hitherto practice demonstrate that one should approach this kind of identification with high dose of precaution. These examinations do not fulfil admissibility criteria of scientific evidence, elaborated in many countries (including the United States), which demonstrates that examination findings may be exposed to mistakes.
4. Courts, when evaluating scent identification should primarily pay attention to the fact whether such examinations had been conducted according to the research methodology in force as well as instruction of the Supreme Court. On the other hand, it should be noted that both sources constitute a minimum, not necessarily implying the objective value of examinations. Scent identification continues to remain a very young discipline, with its methodology and basic assumption still insufficiently verified, which means that expert statements based upon performed examinations are prone to being falsified, the more if experts accept the degree of categorical statements of the opinion in unrelevant manner.
5. Polish courts, when evaluating specific cases of scent identification, have undertaken an attempt to formulate admissibility criteria for scent evidence in the context of the so-called scientific evidence. This would hopefully bring about soon formulation of the definition of scientific evidence in Polish practice and relate it to scent identification.

References

- [1] Texas – *Parker v. State* 80 S.W. 1008 (1904). Ohio – *State v. Dickerson*, 82 N.E.W. 969 (1907).
- [2] Alaska – *Wilkie v. State*, 715 P12d 1199 (Alaska App. 1986), Idaho – *State v. Streeper*, 747 P. 2d 71 (Idaho 1987).
- [3] Inter alia: in Illinois (*People v. Wolf*, 165 N.E. 619, 1929), Indiana (*Ruse v. State*, 115 N.E. 778, 1917), Nebraska (*Brott v. State*, 97 N.W. 593, 1903),

- Iowa (*State v. Grba*, 194 N.W. 250, 1923) and partially in Montana (*State v. Storm*, 238 P. 2d 1161, 1952), where *tracking evidence* is accepted, however evidential value of such measure is not acknowledged in relation to a suspect.
- [4] See also: *Ramos v. Florida* 496 Fo 2d 121, 11 FLW 442, where court recognised that the evidence has to be proven in a fair and objective manner, and also that a dog must be adequately trained and – according to experience – considered reliable while conducting examinations. Similar reservation to the latter aspect was expressed by Arizona court: *State v. Roscoe* 145 Ariz. 212, 700 P.2d 1312.
 - [5] G.A.A. Schoon, Scent identification line-ups using trained dogs in the Netherlands, *Problems Forensic Sci.* 47 (2001) 176.
 - [6] Breakthrough rulings of Dutch Supreme Court, contributing to formation of the present examination methodology: AD5148 No. 01327/01 of 21.11.2001 (response to defendant's objections), AE8856, 01707/01 of 05.11.2002, where court included identification of scent collected from a suspect with the one recovered from firearms into evidential material, and AF5388 01890/02 of 25.03.2003, where the principle of dogs attestation and two-fold indication of a sample in two lineup was confirmed.
 - [7] Scent traces are merely mentioned in the latest manuals: H. Meyer and K. Wolf, *Kriminalistisches Lehrbuch der Polizei*. Hiden (2000) 219-220; R. Weihmann, *Kriminalistik*, Hiden (2002) 96-97. Publications issued prior to the year 2000 practically do not mention such a possibility at all.
 - [8] See e.g.: T. Bednarek: *Przypadek, pewność czy tylko mnożenie wątpliwości? O kreowaniu wizerunku badań osmologicznych raz jeszcze*, *Problemy Kryminalistyki* 227/2000; J. Biederman, J. Wójcikiewicz: *Głosa do wyroku z 5 listopada 1999 V KKN 440/99, Państwo i Prawo* 4/2000; J. Dzierżanowska: *Głosa do wyroku Sądu Apelacyjnego w Lublinie z 29 września 1998. II Aka 142/97, Palestra* 7-8/1999.
 - [9] In sentence of January 30 1998. V KKN 44/97 [...] Supreme Court concluded that evidence from scent experiment is the evidence of particular nature, dependable on specific conditions. When considered among the entire evidence in a case, its positive result may constitute additional significant link. Prof. Józef Wójcikiewicz in a gloss to the above sentence observes pertinently that one can agree with such an evaluation of this evidence only when the “particular nature” of this evidence will mean a low diagnostic value of a method [...] – 15.04.1999 Court of Appeal sentence II Aka 54/99 OSA 200/3/20 in Lublin.
 - [10] 04.12.1996 Court of Appeal decision II Akz 385/96 OSA 1998/1/9 in Lublin.
 - [11] 05.11.1999 Supreme Court sentence V KKN 440/99 OSNKW 1999/11-12/76; see also: 2002.05.07 Supreme Court decision II KKN 467/99 LEX No. 53895.
 - [12] For instance, the Supreme Court concluded that “expert in the area of scent examination should be appointed not to provide the opinion on correctness of scent examinations carried out by law enforcement representatives, but to conduct these examinations with support of relevant specialists (individuals collecting scent samples, presenting them during examinations as well as dog handlers) and, basing on case files, assess the correctness of scent trace recovery” 2000.01.12 Supreme Court sentence IV KKN 269/99 LEX No. 51139.
 - [13] Examinations carried out in duplicate to ensure correctness of findings are also related to a novel method – DNA analysis (however this was abandoned with time): “DNA analysis conducted two times in two independent institutes excluded paternity of defendant in relation to a juvenile Magdalena” – 1998.01.14, and also “meanwhile, casework material demonstrates beyond all doubt that the father of juvenile Magdalena S. is Mieczysław S. Such a statement is supported by the result of DNA analysis, which was carried out by two different scientific institutes” – 2000.01.10 decision of Supreme Court SN III CKN 1025/99.
 - [14] Attestation is also the indicator of correctness of other, more “traditional” examinations, i.e. biological—see: 1996.11.27 sentence SN I CKU 27/96.
 - [15] 1996.12.04 decision of Court of Appeal II Akz 385/96 OSA 1998/1/9 in Lublin.
 - [16] 2001.02.05 decision of Supreme Court SN III KKN 333/98 LEX No. 52013.

- [17] 2002.05.29 sentence of Court of Appeal II Aka 94/02 KZS 2002/9/14 in Cracow; 2002.10.21 sentence of Supreme Court SN V KKN 283/01 LEX No. 56843.
- [18] 2003.01.14 sentence of Supreme Court SN III KKN 465/00 LEX No. 75378.
- [19] “attitude of the 1st instance court to the evidence must be astonishing, the evidence being scent identification casework performed in Voivodship Police Forensic Laboratory in L. Basing on the gloss to the sentence, this evidence was apparently discredited by court meriti due to a quoted ‘no opportunity of verifying a scent casework opinion performed by the institute in Lublin’. This position does not only stand in contradiction to procedural principles, but also incomprehensible. Code of Criminal Proceeding does not cherish the rule of legal theory of evidence and does not introduce the necessity of verification of ‘scent opinion’ with other evidence. In art. 7 of Code of Criminal Proceedings, the rule of free evaluation of evidence is included” – 2003.11.04 sentence of Court of Appeal II Aka 162/03 Prokuratura i Prawo 2004/7–8/32 in Lublin.
- [20] Court in Iowa did not demonstrate any reservations against acknowledging chicken instinct as an evidence, *State v. Wagner*, 222 NW 407 (1928).
- [21] See also Iowa Supreme Court – *State v. McAteer*, 228 NW 72 (1939).
- [22] G.A.A. Schoon, A first assessment of the reliability of an improved scent identification line-up, *J. Forensic Sci.* 43 (1) (1998) 70–75.
- [23] R. Settle, B. Sommerville, J. McCormick, D. Broom, Human scent matching using specially trained dogs, *Anim. Behav.* 48 (1994) 1446; says that the rate of correct indications – depending on the experiment – amounted to 80% or 85%, nevertheless detailed data demonstrate that on some days a dog in question correctly identified only every fourth sample due to unknown reasons.
- [24] Various sources report different number of olfactory cells in dogs, which theoretically is to illustrate the accuracy of dog’s sense of smell. Quotient of olfactory cell number in dog and human would amount to 44, 1000, 10000, depending on publication. These data are not informative, apart from providing a truism that dogs certainly have better sense of smell than people.
- [25] R. Marciniak, Próby określenia wpływu kosmetyków na prawidłowość pracy węchowej psów, *Problemy Kryminalistyki* 226 (1999) 45–46; K. Misiewicz, Badanie wpływu zapachu nikotyny na sprawność wskazań psów specjalnych do identyfikacji śladów zapachowych ludzi, *Problemy Kryminalistyki* 229 (2000) 38–40.
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