DOG SCENT LINEUPS

SCIENTIFIC ISSUES IN POST-CONVICTION CHALLENGES

By Lawrence Myers
Purpose of Presentation

• This presentation will endeavor to cover the high points of the scientific weaknesses of use of dog scent identification of suspects

• As will be pointed out by my colleague, Andrew Tazlitz, there are a number of articles and books available on the subject and closely related subjects, mostly in support of the dog-handler team
Some findings support the use of dogs in identification

- There is peer reviewed information that shows some of the chemical basis for human odor.
  - Curran, et al, 2005
    - Volatile organic compounds is the buzz phrase, referring to the large number of chemicals so far identified as components.
    - The scheme of classification of these VOC’s is
      - Primary – Possibly genetically based
      - Secondary – Environmentally induced - diet, general environment, etc.
      - Tertiary – Colognes, soaps used, clothing, etc.
- There is peer reviewed information that shows trained dogs to be capable of discriminating between different human odors, including in a scent lineup system
  - Schoon, 2002
Some findings support the use of dogs in identification

• There is some basis to support that at least some aspects of human scent are genetically determined or influenced

• There is also basis to support that some aspects of human scent are altered by environmental factors
General Caveats

• Scent is not simply a chemical composition. Scent is the chemical or combination of chemicals perceived by a biological organism.

• Even the composition of the major chemicals emitted by humans is not well defined at this time.
General Caveats

• The most comprehensive work on dog scent line-ups (Schoon) admits that there is a significant risk of misidentification.
  
  – 85% accuracy rate in 2004 compared to as little as 40% in 1994
  
  – Single blind procedures currently used as opposed to double-blind
  
  – A need to maintain very high standards of dog-handler teams
General Caveats

- In the case of the Dutch National Police system of dog-scent lineups, there was fairly recently an instance where officers circumvented the procedures and standards described by Schoon

  - Negating the 85% accuracy figure

  - Resulting in re-evaluation of more than 1000 convictions in which such evidence had been used
General Caveats

• No similar standards are incorporated in most, if any, USA uses of scent lineups or trailing identifications.

  – Although the Dutch work is often cited in support

  – In fact, some programs will not even release their standards or certification methods
Current Use in the United States

• Dog-Scent Lineups are generally not used under that rubric

  – Case law in California, for instance, specifically allows for use of trailing dogs

    • Trailing dogs are dogs trained to scent match and follow a specific human scent vs. tracking dogs that are trained to follow human scent

    • Hence, trailing dogs are used to “trail” an individual among other individuals, often set out as blinds or foils, amounting to a scent lineup, but not in name

    • Unfortunately, in California, the case law is based on a case involving John Preston, a trainer/handler who was utterly discredited
Current Use in the United States

• Now I will show a short video to give you a visual description of what I am referring to.
Current Use in the United States

• Trailing dogs are used to identify suspects without a lineup
  
  – For example the naming of Steve Hatfill as a person of interest in the anthrax letter case was based upon the “trailing” by a dog-handler team to Hatfill’s apartment using an envelope previously containing anthrax as a scent article

  • The envelope had been chemically treated and otherwise kept in storage for some months prior to use as a scent article—Contaminating the sample and probably destroying much, if not all, of any human scent

  • In addition, there was suggestion that the handler had been told where Hatfill lived and that he was a suspect.
Current Use in the United States

• There are no generally accepted standards in the USA at this time for dog scent lineups, for trailing, or for tracking

• Standards are primarily derived through associations such as the United States Police Canine Association, the North American Police Working Dog Association, and so on.

• These standards, in general, do share some elements, but vary widely in wording, in interpretation by certifying officials, and in execution
Current Use in the United States

• Standards are often not enforced rigorously and are primarily ensured through certification or proficiency testing.
  
  – The certifications and proficiency tests are not generally valid as measures of reliability.

  – A valid test would use randomized and double-blind procedures—
    Virtually no organization does

  – An assertion of reliability by testimony of handlers is often made
    in the general form of the team’s performance being confirmed
    by conviction or confession of the suspect. Neither is
    scientifically valid.
Current Use in the United States

- Contamination by other scents, particularly other human scents, is almost universal in cases where dog scent ID has occurred.
  - It has been demonstrated that dogs can follow and identify human scents through some contamination, but the degree to which this is true has not been established
  - In a rather strange study, dogs were trained to identify individual rats through the scent of their urine. The dogs could identify the rats at a stable rate, until 11 different samples were mixed, at which time their performance declined precipitously
  - This needs to be replicated for human scents. In many cases it is simply assumed that no matter what the level of contamination, the dog can perform its task
Current Use in the United States

• A scent ID requires a scent article.

  • Scent articles are also subject to contamination and degradation of scent
    
    – Many cases involve scent articles that were obtained days, weeks, and even months or years prior to the use of the dog-handler team
    
    – There are no universal standards for handling and storage of the articles at the crime scene, or afterwards
    
    – Contamination, alteration and degradation of the scent are virtually inevitable in most cases
Current Use in the United States

• In some cases, tracking dogs and trailing dogs have been used to implicate suspects when there was no scent article and the dog was “cast.”

  – This technique uses a dog to find a track/trail which the dog will then follow.

  – The problem with this technique is that there is no way to determine what track/trail was followed nor when it was laid, let alone if the dog was performing properly.
Current Use in the United States

• Clever Hans
  – Clever Hans was a horse that became a sensation in Germany in the early 1900’s
  – The horse could do mathematical problems with great accuracy
  – Upon investigation, the horse was found to be using facial expressions and other cues inadvertently provided by its handler/trainer
  – It demonstrated that animals could and would use cues from the humans about it to determine what behavior to exhibit.
Current Use in the United States

• Clever Hans phenomenon

  – Many of the better dog training programs recognize the cueing of the handler and try to train handlers to avoid this

  – It is an improvement over programs not recognizing or acknowledging the issue, but it likely does not work effectively.

  – Miklosi and others have demonstrated that a behavior as simple as a brief gaze in a particular direction causes dogs to investigate that direction.
Current Use in the United States

• Clever Hans (more)
  
  – The Clever Hans phenomenon has been scientifically validated further in other studies
  • Most recently, the author published a study in which dogs were trained to discriminate cancer from non-cancer utilizing urine samples from known cancer patients vs. known non-cancer individuals
  • Due to lack of sufficient funding, volunteer trainers and dogs were used with a protocol that requested single and double blind testing through the procedures.
  • All teams reached an 85% criterion of correct response.
  • When tested in a randomized, double blind situation, no team performed better than random chance.
  • This suggests that in all cases the dogs had learned to cue from the handler/trainer’s behavior.
Current Use in the United States

• Clever Hans Phenomenon-
  – In order to avoid this issue, scent lineups needs to be randomized and double blind
    • It could be
  – In order to avoid this issue, the use and deployment of trailing dogs needs to be randomized and double blind
    • It could be
Conclusions

• Human scent exists
  – It may or may not be unique
  – Aspects of human scent that are environmentally based may or may not be important to the dog
  – Therefore, environmentally applied scents may be the scents that are utilized by the dog to match scents
Conclusions

• Contamination exists

  – Dogs are capable of working effectively in some cases in presence of contamination

  – The degree of contamination in which they are capable of so doing is not known, but it is known that there is a point at which they cannot
Conclusions

• Standards
  – There is no universally accepted standard of performance or measurement of same
  – Standards are not equally applied or, in many cases, enforced effectively
  – Standards in most cases are not scientifically valid
Conclusions

• Clever Hans phenomenon exists

  – Without randomized, double-blind testing, results using a trained animal cannot be depended upon. Actual reliability remains simple conjecture.

  – In the field environment, efforts must be made to avoid biasing the dog-handler team
Conclusions

• Dog-handler teams can be effective, but frequently are not
  – Effectiveness requires standards, compliance with standards, and that the standards are scientifically valid and enforced
  – Excuses such as that the effectiveness of the team has been otherwise validated through the courts has no basis in science
A Checklist for Attorneys

• Information on scent article -- How stored, How long, and what conditions in environment;
• Any video or audio recordings of the procedures;
• Description of the procedure;
• Certifications of the dog-handler team;
• Records -- Dog and handler training, maintenance training, other incident records, and veterinary records;
• Departmental policies and procedures related to dog-handler teams
• Standard operating procedures for training and certification
Bibliography
