

Explore the available range of “contact trace” scientific evidence prior to the discovery of DNA and provide example(s) where inconclusive outcomes caused a miscarriage of justice.

The use of DNA evidence in order to catch the perpetrator (perp) of a crime was first implemented into police forces around 1985, and was introduced on a wider scale the year later. This introduction uses the analysis of evidence such as blood, hair strands and semen in order to track down a criminal who may have otherwise gotten away with the crime, as everyone's DNA makeup is unique. This is also known as a DNA Fingerprint. However, prior to DNA's introduction in 1985/6, crime scene investigators had to find other ways to potentially track down the criminal. These techniques include using eye-witness testimonies (a description of the crime as told by an on-looker), footprint analysis, clothing fibres or hoping that the perp left something in particular at the crime scene that would identify them as the prime suspect. The problem with the use of techniques prior to 1985/6 is that they could be misleading, or there may not be enough evidence to attract a lead suspect, or may even lead to a 'miscarriage of justice'. There are also instances of some cases that remained unsolved, but were reopened with the use of DNA analysis in order to finally discover who the perp was. A variety of these cases will be discussed as follows.

The first case that I will discuss is the investigation with the epithet the 'Rotheram Shoe Trophy Rapist'. This case includes the attacks and or rapes of at least 6 women during a 4 year span throughout the 1980s. The nickname 'shoe trophy' comes from the fact that the man who carried out these attacks- who was later identified as James Lloyd- kept items that belonged to the women to keep as a memento or trophy. When the crimes were still fresh, police tried to identify who the perp was, and following exposure of the crime on the British television *Crimewatch*, were sent 350 potential suspects by the public (Stokes, 2006). However, later convict Lloyd was not one of those names given to authorities, and the police were unable to arrest anyone for the crimes as they did not have sufficient evidence to do so. It wasn't until 2001 that the case was reopened following advancements in genetic profiling, and the police issued a list of 40 people who may have had some relations to the culprit. One of these was Lloyd's sister, who had provided authorities with a DNA sample of her own following an offence prior to this. This therefore allowed officials to compare the DNA of Lloyd's sister to DNA evidence found at the original crime scenes, and thus Lloyd was the prime suspect. He was arrested in 2006 (Dunlop, 2006) after authorities raided his home and found the trophies that were kept from the crimes. This case is a clear indicator emphasising the importance of the introduction of DNA sampling and analysis, as DNA evidence was the key differentiator in deciding whether the correct suspect is arrested or not. The use of DNA analysis also comes with the benefit that it is very accurate in assessing whether the suspect was present at the crime scene

or not, as a DNA fingerprint is unique to one person. As in James Lloyd's case, DNA can also be used to recognise familiar DNA patterns between family members, and could therefore also help to discover the culprit of a crime where a sample of DNA is present.

Another police investigation where DNA analysis played a key role in catching the perpetrator is the murder of Roy Tutill in 1968. In this case, a young Roy Tutill was kidnapped on his way home from school, and was raped and murdered by an unknown (at the time) assailant. Tutill's body was found 3 days later, and the only evidence that police had at the time were samples taken from Tutill's body and clothing, yet they only allowed investigators to determine that the suspect was either blood group 'A' or 'O' (Goodwin, Linacre and Hadi, 2019). Police had suspicions that Brian Lunn Field- the man who was finally arrested for this case years later- was the culprit, but Field denied having any knowledge of the murder. In 1996, a DNA sample was taken from Tutill's preserved trousers, yet it wasn't until 200 that a link came from this sample that was identical to Field's DNA profile that was taken for a different offence a year prior. This led to Field being arrested in his home in 2001, and although he initially denied knowing anything of the case, the following day he confessed to the crime, providing the investigators with grave details of how he carried it out. He was arrested later on in the year and was sentenced for life. This case is another example of how the introduction of DNA sampling has benefited the UK justice system in a great way, as it was DNA profiling alone that helped to catch the true criminal in this vile case, despite the fact that his arrest came 33 years after the initial incident. This is a problem as the families of the victims may not live to see justice, as is clear in this case, as Tutill's parents had passed away prior to Field's conviction (News.BBC.co.uk).

Another example of a case where DNA sampling led to being the difference between an innocent man and the real culprit being locked up can be clearly seen in the rapes and murders of Lynda Mann in 1983 and Dawn Ashworth in 1986. Forensic sciences at the time of the 1983 rape were able to use semen samples from Mann's body to determine that the rapist was of blood type 'A', yet that was it. When the 1986 rape came about, the semen samples taken helped investigators to determine that Ashworth's rapist was also of blood type 'A'. The prime suspect in this case was therefore Richard Buckland, who confessed to the 1986 crime when he was questioned about it, but was unaware of the first crime (Graff, 2015). However, in 1985, DNA profiling was carried out on the semen samples from the rapes, and the results were compared to a blood sample off of Buckland. The conclusions were that the women were raped by the same man, yet this man was not Buckland. A widespread investigation was brought upon, where around 5,500 men were asked to give DNA samples, yet there were no matches to the semen DNA profile (Cobain, 2016). However, it later was overheard that Colin Pitchfork asked his friend to provide a DNA sample in his name, as he had already done so for another friend. This conversation was then passed on to the police, who later arrested Pitchfork in 1987 after it was

found that a sample of his DNA did in fact match the DNA profile of the semen from the rapes. From this, it is clear that Pitchfork was 'the first person convicted of murder based on DNA fingerprinting evidence' (Wikipedia, 2019). Again, this clearly is an example of how conviction based off of contact trace evidence alone can be very problematic, as if DNA profiling was not implemented when it was, then an innocent Richard Buckland would have been incarcerated for this crime. This clearly shows a potential flaw that was in the UK justice system prior to 1985, as there could be a countless amount of cases that the same problem could be found within.

The case of John Cooper's murders of siblings Richard and Helen Thomas in 1985, and then the murders of Peter and Gwenda Dixon 4 years later are also very interesting to people learning about the interpretation of DNA profiling in order to catch the culprit. At first, it was unclear to investigators who carried out the double murders previously mentioned, due to a supposed lack of evidence. Cooper was put in jail in 1998 for various counts of burglary and robbery (BBC News, 2011) and, during this time, the reopening of the murder cases was carried out by local police onvestigators. It was, however, the advancement of DNA analysis technology that led to Cooper being convicted for the murders also. This is due to the fact that the same shotgun that Cooper had used to carry out his past robberies seemed to feature- following further inspection- traces of blood from Peter Dixon's murder in 1989. This blood would not have been able to be identified as Mr Dixon's if it wasn't for DNA profiling, as well as the fact that Pitchfork had painted over the blood, possibly in an attempt to hide it. However, it was also discovered at the time of his arrest that a pair of Pitchfork's shorts were also found to have traces of DNA from Peter Dixon. This led to Cooper being sentenced for these murders not long after being released for the aforementioned robberies in 2009 (BBC News, 2011). Again, this is a clear depiction of how the advancement of DNA profiling and analysis has led to the conviction of a criminal, that would have otherwise gotten away with their crime due to a lack of evidence. This clearly shows a positive advancement in the UK justice system following 1986.

There is another example of how the induction of DNA evidence helped to find the perpetrator for a crime, however this time the suspect was already thought to have committed the murder due to contact trace evidence found from the scene. This was the abduction and murder of 8 year old Sarah Payne in the summer of 2000. This case in particular led to a cross-country manhunt for Sarah, and eventually led to the arrest and conviction of 41 year old Roy Whiting. Unlike the above cases however, it is interesting how Whiting was arrested for this crime. This is because he was already in the eyes of police investigators for being a prime suspect merely a few days after the abduction, and the use of DNA analysis wasn't the sole technique used to arrest him, more it just helped confirm he was the culprit. He was already seen as the main suspect, as an evidence of contact traces linked him to the crime scene. This is apparent where, following forensic tests, it was discovered that fibres from Whiting's van were found on one of Sarah's shoes (Wikipedia, 2019). Although this wouldn't have been able to 100% confirm that Whiting

was the abductor, this along with the use of DNA analysis helped police to arrest Whiting. The DNA analysis carried out by police investigators was from a strand of hair that was found on a sweatshirt in Whiting's van, and it was established that there was "one-in-a-billion chance of it belonging to anyone other than Sarah"(News.BBC.co.uk, 2001). This profiling and the contact trace evidence combined helped police officers to arrest and convict Whiting in 2001, where he was sentenced for life (News.BBC.co.uk, 2001). Unlike the cases mentioned above, this case is a clear indicator that sometimes the use of contact trace evidence alone could potentially be enough to point police officers in the direction of the right culprit- yet DNA profiling helps officers to confirm this suspicion with less chance for a miscarriage of justice to be carried out.

Another case that emphasises the importance of the 1986 widespread introduction of DNA profiling is the 2016 arrest of Eric McKenna, who was arrested for two rapes in 1983 and 1988. However, if it wasn't for an altercation between McKenna and his neighbour in 2016 which led to McKenna urinating in his neighbour's plant pot (The Guardian, 2018). This altercation led to the conviction for the rapes as a swab of his DNA was taken from the plant pot in 2016, and forensic evidence analysis led to the DNA matching a sample that was taken contemporary to the rapes in the 1980s. This led to his arrest and conviction in 2018. This clearly shows the importance of the introduction of DNA profiling, as- again- it was the differentiating factor that led to the conviction of the culprit, who otherwise would have gone undetected by police officers if it wasn't for this "neighbourly dispute and a moment of stupidity" (The Guardian, 2018).

Overall, it could be argued whether contact trace evidence on it's own is enough to convict a culprit of a crime without the backing up by DNA profiling. This can be seen in many different ways, including a lack of contact trace evidence altogether, or a small amount that doesn't give enough evidence to allow officers to make an arrest. However, the use of contact trace evidence alongside DNA profiling clearly helps solidify an arrest made by officers, as there are many scenarios where contact trace evidence could be found on a person's belongings without them committing a crime, and the same could be said to an extent regarding DNA evidence. However, the use of the two together is relatively undeniable in catching culprits. This can clearly be seen in many of the above cases.

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