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Case No: 202304552 B1

IN THE COURT OF APPEAL (CRIMINAL DIVISION)
ON APPEAL FROM THE CROWN COURT AT MAIDSTONE
MR JUSTICE CAVANAGH
T20237018

Royal Courts of Justice
Strand, London, WC2A 2LL

Date: 01/08/2025

Before :

PRESIDENT OF THE KING'S BENCH DIVISION
MRS JUSTICE LAMBERT
and
MR JUSTICE WALL

Between :

REX
- and -
HEDGES

Respondent

Applicant

Ms Jo Martin KC and Mr Jason Beal (instructed by Parlby Somerville) for the Applicant

Hearing dates : 02 July 2025

Approved Judgment

This judgment was handed down remotely at 12.00 noon on 1 August 2025 by circulation to the parties or their representatives by e-mail and by release to the National Archives.

Dame Victoria Sharp, P:

1. On 13 November 2023 at the Crown Court at Maidstone, before Cavanagh J and a jury, the applicant, Sian Hedges, was convicted of the murder of her son, Alfie Phillips. At the time of his death on 28 November 2020 Alfie was 18 months' old. The applicant's partner, Jack Benham, was convicted of Alfie's murder at the same trial.
2. On 2 July 2025 we heard a renewed application for leave to appeal against conviction by the applicant. The essential issue raised (the admissibility of expert forensic odontologist evidence as to bite marks) was fully argued below. We had the benefit of the excellent written submissions that were made to the judge and of the judge's detailed reasons for refusing to exclude that expert evidence. We also had the benefit of Ms Martin KC's concise and considered submissions on the applicant's behalf before us. We concluded that the judge's reasons for admitting the evidence were unimpeachable and it was not arguable that the applicant's conviction was unsafe. We accordingly refused leave, for the reasons that follow. We give leave for this judgment to be cited as our observations on the matters we have considered may be germane if similar issues are raised in future cases.

The factual background

3. The events leading to Alfie's death occurred overnight on 27/28 November while the applicant and Jack Benham were alone with Alfie in the caravan in which they all lived. Alfie was last seen alive by other people in the early evening of 27 November 2020. He had no visible physical injuries when he went into the caravan. During that night, there were only two people in the caravan with Alfie: the applicant and Jack Benham. At 11.30 a.m. on 28 November the applicant and Jack Benham left their caravan, carrying Alfie. Alfie was already dead. He was described by those who then saw him as being blue and floppy and he was not breathing. The paramedics, who arrived on the scene 10 minutes later, noted that Alfie already had rigor mortis, hypostasis, and postmortem staining. His death was confirmed by doctors at Margate hospital where he was taken.
4. The doctor who saw Alfie's body in hospital noted that Alfie had multiple bruises to his face and a deformity to his left arm and wrist. He caused X-rays to be taken. They showed fractures to the left wrist and right forearm. As a result of those abnormal findings, an investigation into the cause of his death was commenced by the police.
5. The medical investigation which followed revealed that Alfie had sustained numerous and significant injuries in the period leading up to his death. He had a large number of abrasions and bruises to his face and head, some of which had the appearance of having been caused by fingernails. Two of the injuries to the head and an injury to the left eye gave the appearance of having been inflicted with a curved object. There was evidence of blunt force trauma to the mouth which was likely to have been the result of a compressive injury consistent with his face having been smothered. There was evidence in the form of bruising to the front of the neck and petechial haemorrhages to the left eye and the lining of the mouth, that Alfie's neck had also been compressed. He had sustained a number

of fractures: fractures to the big toes of his right and left feet, fractures to the left and right ulna and radius, a fracture to the fourth toe on his left foot, fractures to his left tibia and fibula and a number of fractures to his rib cage.

6. The pathologist was able to determine that a number of those fractures occurred within 12 hours of Alfie's death; the others might have been caused close in time to his death but were certainly caused within the last 72 hours of his life. There was evidence of the presence of cocaine and a metabolite of cocaine in Alfie's blood and urine. This could have arisen from passive inhalation of the drug or by Alfie touching a surface contaminated with it. The applicant and Jack Benham had consumed cocaine together on the night of Alfie's death.
7. The pathologist concluded that Alfie had died following a significant and sustained assault resulting in numerous fractured bones. She was unable to determine whether death was caused by asphyxiation as the result of smothering or suffocation, or respiratory dysfunction, a by product of the assault. She recorded the cause of death as "unascertained - unnatural causes".
8. Materially for present purposes, the pathologist noted marks to Alfie's body which she thought might be the result of his having been bitten. Those marks were photographed and the photographs were then sent for analysis to Dr Philip Marsden, a forensic odontologist. Dr Marsden also took impressions of the teeth of the applicant and Jack Benham.
9. He concluded that two injuries, a mark to Alfie's right forearm and another to his back, were "probable" bite marks. A third injury, a further mark to Alfie's right forearm, he concluded was a "possible" bite mark. He categorised the marks in this way using the scale suggested by the British Association of Forensic Odontologists in their Guideline for Good Practice in Bite Mark Identification and Analysis (2010). This scale sets out the four descriptions which should be used when reporting on a suspected bite make injury: *exclusion* (the injury is certainly not a bite mark); *possible* (the patterning of the injury might have been caused by teeth such that it being the result of a bite make cannot be ruled out); *probable* (the patterning of the injury is strongly suggestive of it having been caused by teeth but an alternative cause cannot be entirely excluded), and *definite* (there is no reasonable doubt that the mark was left by teeth).
10. Dr Marsden then compared the three marks to Alfie's body with the impressions taken from the applicant and Jack Benham. In respect of the two marks to Alfie's right forearm, there was insufficient detail in them for him to be able to say that either defendant at trial could have been, or was not, responsible for making the marks. However, in respect of the injury to Alfie's back, he said that he could exclude the possibility that it had been made by Jack Benham. The mark had been left by someone with a canine tooth which was rotated and out of alignment with its neighbouring teeth. Jack Benham's teeth did not have those characteristics. The applicant's teeth however did exhibit such characteristics. He therefore concluded that her teeth *could* have made the "probable" bite mark to his back and that she *could* have been responsible for biting her son.

11. It is important to note that Dr Marsden did not purport be able to make a positive identification of the applicant as the biter. He accepted that there might be other people in the world with similar dentition to hers.

The significance of the bite mark evidence

12. The prosecution case (as later accepted by the jury) was that both defendants played a part in what occurred. The events took place in a small open plan caravan where, it was said, each defendant must have been aware of what the other was doing. The inference the prosecution invited the jury to draw was that both defendants must have been involved in the physical attack on Alfie or, at least, supported and encouraged the other in what he or she did.
13. The bite mark was not a direct or indirect cause of death. Its significance to the trial lay in the fact that neither defendant accepted playing any part in the fatal attack on Alfie in the caravan that night and impliedly blamed the other for the entirety of what had occurred. The jury were invited to conclude that, on the facts of this case, only two people could have been responsible for any bite mark to Alfie's body. The applicant and Jack Benham were the only people to have spent time with Alfie in the period leading up to his death. The jury were therefore invited to conclude that, if they accepted that the mark to Alfie's back was a bite mark and Jack Benham could be excluded as the biter, the mark could only have been left by the applicant. Were the jury to conclude that the applicant had bitten Alfie that night, her assertion of lack of involvement would be dented.
14. We should mention that there was other evidence touching on the issue of biting. First, a text exchange between the defendants in October 2020. The applicant sent Jack Benham a text in which she said "the little shit bit my arm this morning. It fucking hurt". He replied, "lol, bite him back, babes, just not as hard". She then texted, "he finds it funny. I've tried". His reply was, "bite hard you have to once I bet". She responded, "yeah but I don't want to have to do that". In evidence, she denied that she had ever bitten Alfie. She said that she had nibbled him but not in a malicious way. She accepted that it was possible that she had left a mark. Secondly, Jack Benham said that on the night of Alfie's death, he had bitten him but not hard enough to leave a mark. In short, each defendant at trial accepted some deliberate contact between their teeth and Alfie's skin but both denied that this was done with such force as to cause injury.

The challenge to the forensic odontology evidence at trial

15. As already mentioned, the prosecution wanted to adduce the evidence to show both that as part of the attack on him Alfie had been bitten, and to connect the applicant with the violence inside the caravan. Jack Benham also wanted the evidence of Dr Marsden to go before the jury. It was his case that he was nothing to do with the violence meted out to Alfie that night. Therefore, any evidence that some of the violence must have been inflicted by the applicant was beneficial to his case. Further, given his admission that he had bitten Alfie (although not hard enough to leave a mark) it was in his interests to make clear at trial that the only person who could be scientifically linked to a bite mark injury was the applicant rather than him.

16. The applicant's challenge to the admissibility of Dr Marsden's evidence took place at a *voir dire* which took two days. Dr Marsden gave evidence for the prosecution. He set out his qualifications. He is a qualified dentist with a postgraduate qualification in forensic odontology. He holds a diploma in Forensic Medical Sciences and a diploma in Forensic Human Identification. He has practised as a forensic odontologist since 1989 and has twice been president of the British Association of Forensic Odontology. He has provided expert reports to both the prosecution and defence in over 150 cases and has given evidence in court more than 20 times.
17. It was his evidence that it was not always possible to determine whether a mark is a bite mark or whether the mark has been caused in some other way. He said that in many cases in which he had been asked to make such a determination he had been unable to do so and reported this back. However, in this case he had clear photographs of each of the injuries and was able properly to reach the conclusions he had reported on. He was able to give an opinion as to whether each of the disputed injuries was a bite mark. He said that he could exclude Jack Benham from having caused the injury to Alfie's back because his dentition would not have permitted him to have left that mark. He did not claim that he could identify the applicant as having made it but rather that he could not exclude her as a candidate for having done so as her dentition would have rendered her capable of leaving the mark.
18. The evidence relied on by the applicant to challenge the reliability of expert forensic odontology evidence on bite marks came from Professor Iain Pretty, who gave evidence at the *voir dire* on her behalf. Professor Pretty is now retired from the University of Manchester. He has postgraduate qualifications in forensic dentistry. He is a fellow of the Royal College of Surgeons of Edinburgh and the Faculty of Public Health and former chair of the odontology section of the American Academy of Forensic Sciences.
19. Professor Pretty did not look at the images of the injuries to Alfie or at the impressions of the teeth of the applicant and Jack Benham taken by Dr Marsden. He did not engage with the facts or the particular evidence in this case either. Instead, it was his contention that there was no sufficiently strong scientific basis for ever admitting evidence of bite mark identification and bite mark comparison at trial. He said that a forensic odontologist should not be permitted to give expert evidence to the effect that a particular mark is probably a bite mark or that a particular individual's teeth can be excluded or not excluded from having made that mark.
20. He said that in the 1980s and 1990s there were miscarriages of justice in the United States caused or contributed to by defective forensic odontology expert evidence. He relied on a number of scientific reports which in his opinion undermined the integrity and safety of bite mark comparison evidence. In particular:
 - i) A report by the US National Academy of Sciences from 2009 which concluded that forensic odontologists should no longer be permitted to

claim that the characteristics of any person's teeth are unique. That report recommended caution in respect of bite mark expert evidence;¹

- ii) A draft report of the US National Institute of Standards Technology which was published on the 11 October 2022. In particular, a passage in it which reads: “Forensic bite mark analysis lacks a sufficient scientific foundation because three key premises of the field are not supported by the data. First, human anterior dental patterns have not been shown to be unique at the individual level. Second, those patterns are not accurately transferred to human skin consistently. Third, it has not been shown that defining characteristics of those patterns can be accurately analysed to exclude or not exclude individuals as the source of a bite mark”;
- iii) An article in the US Journal of Law and Biosciences from 2016 entitled “Forensic Bite Mark Identification: weak foundations, exaggerated claims”. That article criticised the practice of some forensic dentists of making a positive identification of someone as being responsible for having caused a bite mark solely from comparing the bite mark itself and impressions of the suspect’s teeth; and
- iv) Research from the University of Glamorgan. Twenty three forensic odontologists were each sent four sets of photographs of suspected bite marks to analyse and determine whether the mark was a human bite mark. Eight weeks later the same forensic odontologists were sent the same sets of photographs to be reanalysed in the same way. The aim of the exercise was to see whether all forensic odontologists reached the same conclusions based on the same evidence and whether the same forensic odontologist presented with the same evidence on different occasions would reach the same conclusions they reached on the previous occasion. Of the forensic odontologists approached, only three of them describe themselves as being very experienced. Of the rest, seven describe themselves as beginners in the field and ten were still students undertaking postgraduate degrees. There were disagreements among the twenty seven odontologists as to whether the mark was probably a bite mark. Some of them reached a different conclusion when asked to re analyse the photographs from that which they had reached when they were first approached to do so. Professor Pretty relied on this as evidence that the science of bite mark analysis was not sufficiently robust to be the basis for expert evidence at trial.

21. Professor Pretty was also critical of some of the methodology employed in this case. He said that it was difficult to draw conclusions such as those reached by Dr Marsden simply from viewing photographs of the marks; that there was a real risk that the shape of the mark on the skin was distorted because of the skin’s natural

¹ The report did not suggest however that it should be excluded as a potential form of evidence in the United States. Indeed, as we understand it, such evidence is admissible in all American states with the possible exception of Texas.

elasticity, and he pointed out that Dr Marsden's conclusions were subjective in nature.

22. At the conclusion of the *voir dire* the judge indicated that he would admit Dr Marsden's evidence. Later he gave a full written judgement explaining his reasons for doing so. The judge concluded that Dr Marsden's evidence was relevant to a central issue in the case, namely identifying who inflicted injury to Alfie. He found Dr Marsden to be a highly qualified and experienced forensic odontologist who was capable of giving evidence of this nature. Although there was evidence of some controversy surrounding aspects of bite mark interpretation evidence, such evidence had generally been held admissible in the past. There was no scientific agreement that it was unreliable if used in the way in which Dr Marsden had used it. Dr Marsden's approach was in keeping with good practice. The judge found that the test for admissibility was satisfied and there was no basis to exclude the evidence under s78 Police and Criminal Evidence Act 1984.

Submissions in support of the application for leave

23. Ms Martin submitted that the admissibility of forensic odontology evidence of this sort is not suitably regulated or tested to allow it to be admitted at a criminal trial. She relied on the fact that this sort of evidence is not currently regulated by the Forensic Science Regulator, is not the subject matter of any particular CPS prosecution guidance relating to its use, and no primer has been produced on the subject from the Royal Society. Although the British Association of Forensic Odontologists has produced the 2010 booklet (to which we have already referred) the organisation is a membership organisation which does not appear to evaluate the performance of those who are listed on its website as members. There are relatively few qualified odontologists who will accept instructions in this field which might be an indication of the current state of the science. In this case, there was no peer review of Dr Marsden's work. The research papers relied on by Professor Pretty cast real doubt on the robustness of evidence of this nature. She submitted that the trial judge was wrong to dismiss his evidence.
24. In written submissions, the respondent made the following points:
 - i) Dr Marsden is a highly experienced forensic odontologist. While Professor Pretty had relevant qualifications, he did not examine the photographs of the alleged bite marks or the impressions taken from the applicant and Jack Benham. Further, as Professor Pretty accepted during the *voir dire*, he had not practised as a forensic odontologist for many years and could not remember the last forensic case he undertook;
 - ii) The context within which this evidence was presented was important. The prosecution did not call Dr Marsden to make a positive identification of the applicant as the biter. The jury's ability to identify her as such rested on their view of Dr Marsden's evidence and the conclusions they drew from the rest of the evidence in the case as to the pool of people who might have been responsible for causing the injury;
 - iii) The various reports relied on by Professor Pretty had limited, if any applicability to this case:

- a) The report of the US National Academy of Science was a lengthy report on forensic scientific evidence which devoted only a few pages to bite mark evidence. This report was critical not of bite mark comparison evidence in general but of those forensic odontologists who asserted that human dentition is unique;
- b) The miscarriages of justice in the United States to which Professor Pretty referred were the result of an attempt by forensic odontologists to assert the unique nature of each person's dentition. The 2016 report, ("Forensic Bite Mark Identification: weak foundations, exaggerated claims") was critical of the same sort of evidence;
- c) Despite these criticisms of one aspect of forensic odontology, the evidence of forensic odontologists is admissible in the United States;
- d) Other scientific papers² suggest the science of forensic odontology has moved on, so that it is now regarded as good practice to offer a *definite* identification of a suspect through bite mark analysis. The respondent's case is that Dr Marsden's approach to forensic odontology is in-line with this approach.

Discussion and conclusion

25. The test for the admissibility of expert opinion evidence is set out in Criminal Practice Direction (CPD) 7.1.1:

"Expert opinion evidence is admissible in criminal proceedings if, in summary: it is relevant to a matter in issue in the proceedings; it is needed to provide the court with information likely to be outside the court's own knowledge and experience; the witness is competent to give that opinion; and the expert opinion is sufficiently reliable to be admitted."

26. This test reflects the criteria for admissibility set by the common law, as summarised in *R v Dlugosz* [2013] EWCA Crim 2 where this court said:

"It is essential to recall the principle which is applicable, namely, in determining the issue of admissibility, the court must be satisfied that there is a sufficiently reliable scientific base for the evidence to be admitted. If there is, then the court leaves the opposing views to be tested before the jury".

² In an article in the 2018 American Journal of Forensic Medical Pathology entitled *Epidermis and Enamel: Insights into gnawing criticisms of human bite mark evidence*, eleven forensic odontologists wrote, "rather than adopting the premise that bite marks are unique, experienced odontologists consider that many dentitions can produce similar patterns and that some bite patterns do not contain sufficient information to indicate any relationship to any specific individual. This explains why odontologists do not continue analysis in most cases they initially evaluate and why so few cases with bite mark evidence reached the courts".

27. CPD 7.1.2 sets out factors which the court may take into account in determining the reliability of expert opinion and especially of expert scientific opinion. They include:
- “(a) the extent and quality of the data on which the expert opinion is based;
 - (b) the validity of the methodology employed by the expert;
 - (c) the extent to which any material upon which the experts opinion is based has been reviewed by others with relevant expertise and the views of those others on that material;
 - ...
 - (h) if there is a range of expert opinion on the matter in question where in the range the expert's own opinion lies and whether the experts preference has been properly explained; and
 - (i) whether the experts methods followed established practice in the field and, if they did not, whether the reason for the divergence has been properly explained.”
28. It was not disputed at trial that the evidence of Dr Marsden was relevant to a matter in issue (7.1.1(a)) and was needed to provide the court with information likely to be outside of the court’s own knowledge and experience (7.1.1.(b)). The issue as to which of the two adults in the caravan, or both of them, caused Alfie's injuries was plainly the central issue in the trial, and a lay juror would be unable to assess whether a particular mark was a bite mark and, if it was, who might have been responsible for inflicting it.
29. The argument on admissibility centred therefore on the criteria in 7.1.1(c), and 7.1.1.(d) viz. whether expert opinion on bite mark evidence was sufficiently reliable to be admitted and whether Dr Marsden was competent to give that opinion.

Sufficient reliability

30. We turn first to the question of sufficient reliability.
31. The concerns about forensic odontology evidence expressed by Professor Pretty were based in the main on what had occurred in the past in the United States where forensic odontologists purported to make a positive identification (that a person had bitten another person) from odontology evidence alone, and they did so on the basis that each person's dentition was unique.
32. However, Dr Marsden specifically eschewed such an approach. It is now accepted and was clearly accepted by Dr Marsden in his expert reports for the trial, that the current state of the science does not permit such claims properly to be made.

Expert evidence which purports to say that a particular suspect was responsible for biting a victim, relying only on bite mark comparison, is not reliable therefore and is not a claim compatible with the current state of the relevant science.

33. The scientific/academic papers provided by the prosecution (but not Professor Pretty) make it clear that the approach of forensic odontologists has changed. A 2018 editorial in the American Journal of Forensic Medical Pathology sets out current practice.

“Bite marks are no longer to be said to be unique. Experienced forensic odontologists accept that many dentitions can produce similar patterns. Some bite patterns do not contain sufficient information to allow them to be associated with any specific individual. Odontologists now do not continue to analyse bite marks in many cases they are asked to consider because of the shortcomings”.

34. Professor Pretty did not refer to this or other publications which addressed the concerns in the articles and studies he did rely on. This is unfortunate. It is the duty of any expert to draw the court’s attention to research which might contradict that used by the expert in forming his views. This enables the court to set the concluded views of one expert against the range of contemporary academic research and opinions, which in turn, is part of the assessment that must take place as to the reliability of those conclusions.
35. There are undoubtedly limitations on the scope of expert forensic odontology evidence on bite mark identification and comparison. An expert may face difficulties in identifying a mark as a probable or possible bite mark because of a range of factors, including skin elasticity, movement of the victim and/or the perpetrator or the quality of the imaging of the mark. The science of forensic odontology is sufficiently robust however to enable a suitably qualified expert to consider whether a sufficiently clear mark on skin was, or was not, caused by biting. There is no evidence that this is not a proper exercise to conduct and report on.
36. Similarly we have concluded that in a case of a probable bite mark, where there is an unusual feature of the dentition which can be identified from the mark, an appropriately qualified expert in possession of a cast of a suspect's teeth can determine whether that suspect shares that unusual feature. The science does not currently permit such an expert to move from that point to making a positive identification of the suspect as having inflicted the bite. It simply permits the properly qualified expert to include the suspect in a list of potential biters or exclude him from that list. It is for the jury to then consider that finding in the context of the other evidence in the case to see how far, if at all, that evidence assists in establishing the prosecution case.
37. We find nothing inconsistent with these conclusions in the Glamorgan paper to which we were taken by Ms Martin in her oral submissions and upon which she placed significant emphasis. The twenty three participants in the study ranged from absolute beginners with no experience of forensic odontology through to students and experienced odontologists. Much of the apparent inconsistency and

variation in the study was due to the inclusion of participants with such varying levels of expertise. Both variation and inconsistency were much reduced when only the answers given by experienced odontologists were considered.

38. Turning then to Dr Marsden's evidence, in our opinion, it was notably careful and cautious and wholly in line with modern practice.
39. Dr Marsden indicated that in many cases he would decline to provide a report where in his opinion there was no evidence that the mark he was asked to examine was a bite mark or where there was insufficient detail in the mark to allow any meaningful comparison between that mark and the dentition of a suspect to be made.
40. In this case Dr Marsden was able to find sufficient features in two of the skin marks to conclude that they were probable bite marks but was only able to say that the third mark was a possible bite mark, using the scale of certainty suggested by the British Association of Forensic Odontologists. He took a similarly careful approach when comparing the marks on the skin to the dental impressions he had taken from the applicant and Jack Benham, where he declined to draw any conclusions in respect of two of the marks. In respect of the third mark, he did not purport to make any positive identification of the applicant. That is, he did not fall into the trap either of asserting that bite marks were unique or that a positive identification could be made on an individual from such evidence on its own – assertions which had caused the concerns in some of the material upon which Professor Pretty had relied.
41. Dr Marsden was fully aware of the relevant limitations in bite mark evidence identified by Professor Pretty and took account of those matters when expressing his opinions. In particular, Dr Marsden used his experience to determine that there was a particular feature of the impression left in the mark on the body, namely the misalignment of a canine tooth, to make comparison possible. He demonstrated his awareness of the limitations of conducting this exercise using photographs alone (a matter referred to by Professor Pretty) but was clear that the photographs in this case were of good quality and allowed for the comparison properly to be made. Dr Marsden was also aware that there can be distortion to a bite mark impression on the skin as a result of movement caused by the natural elasticity of the skin. He therefore looked for evidence of such distortion but found none. When he considered whether the teeth of either or both of the defendants could have caused the mark, he limited his evidence to saying that the unusual feature he found in the mark on the skin was not found in the dentition of Jack Benham but was found in that of the applicant.

Competence

42. The further question that fell to be determined was whether Dr Marsden was a suitably qualified expert. There can be no question but that he has relevant qualifications and experience. Further, in the course of the *voir dire* he demonstrated his careful approach to his work. He did not seek to make exaggerated claims for his science. He showed himself to be aware of the potential difficulties of carrying out an analysis working only from photographs and because of the elastic nature of skin. Alive to those difficulties, he satisfied

himself that they did not prevent him from making the analysis he attempted. Further, in the course of Dr Marsden's evidence he explained why his reports in this case had not been peer reviewed. He explained that there were few people in this country who were suitably qualified and prepared to undertake this work, not because of the reliability of the science, but because it was time consuming and most forensic odontologists preferred to concentrate on other areas of their work such as the identification of corpses by comparing dental records with the teeth of the deceased. The absence of peer review is a factor for the court to consider when assessing the admissibility of an expert report but it is not the only relevant factor.

43. Although the defence relied on Professor Pretty's evidence at the *voir dire* to make a general attack on the reliability of bite mark evidence, they called no evidence at trial to counter Dr Marsden's evidence or to impugn his methodology. The applicant's concern that Dr Marsden's evidence involved a degree of subjective analysis is a false point. There are some branches of forensic expert evidence which rely wholly or mainly on calculation for their validity –for example, the determination of the level of alcohol in someone's blood. There are others which rely in large part of the interpretation of results in reliance on the expert's particular expertise. That is the case, for example, when fingerprints found at a crime scene are being compared to a set of prints taken from a suspect, or a thread of material found at a crime scene is being compared to a garment recovered elsewhere to see whether the thread could have come from that garment. In such cases, the expertise in making the subjective comparison is the very reason why an expert witness is required.
44. The trial judge was able to assess Dr Marsden when he gave evidence at the *voir dire*. He was able to assess the robustness of the science and the expertise of Dr Marsden by reference to the evidence of Professor Pretty. At the conclusion of the 2-day *voir dire* the trial judge concluded that Dr Marsden's evidence was sufficiently robust to be placed before a jury for their consideration in a lengthy and fully reasoned judgment. We do not regard it as arguable that he was wrong to reach the conclusions he reached.
45. Finally, it should be noted that this was otherwise a very strong case against the applicant. She had been in a small caravan with her partner throughout most of the night during which Alfie sustained the injuries which led to his death. There was some evidence that she was away from the caravan for a short period during the night to acquire drugs but was not away for a significant period. In any event, it was her case in her police interviews that Alfie was still well and feeding well after she returned to the caravan for the last time. (She later changed this to say that she did not really look closely at Alfie after she returned). There was no suggestion that anyone else had been in the caravan at a time when they could have caused or contributed to the injuries. The applicant accepted that she had bitten her son and might have left a mark (albeit that she disputed the strength of her bite). She had sent texts to her partner before the night Alfie died showing some annoyance with her son. She remained in the caravan until 11.30 a.m. by which time her son was dead and had obviously been so for some time. It would be fanciful to suggest that the case against her was not a strong one, even without the evidence of Dr Marsden. There was an obvious inference to be drawn from the totality of the evidence: the applicant was either responsible for some or all of

the violence or acted to assist or encourage the person who inflicted it. There was no danger of the applicant being convicted on the basis of the expert opinion evidence alone.