Hilary Term
[2022] UKPC 12
Privy Council Appeal No 0055 of 2019

JUDGMENT

Devon Hewey (Appellant) *v* The Queen (Respondent) (Bermuda)

From the Court of Appeal of Bermuda

before

Lord Briggs
Lord Hamblen
Lord Stephens
Lord Hughes
Lord Lloyd-Jones

JUDGMENT GIVEN ON
11 April 2022

Heard on 1 and 2 February 2022

Appellant
James Wood QC
Amanda Clift-Matthews
Simone Smith-Bean
(Instructed by Simons Muirhead & Burton LLP)

Respondent
Tom Poole QC
Nicole R Smith
Maria Sofianos
(Instructed by Charles Russell Speechlys LLP (London))

LORD HUGHES AND LORD LLOYD-JONES:

1. This appeal concerns the admissibility and probative value in criminal proceedings of expert evidence relating to particles which may have their origin in the discharge of a firearm.

Factual background

2. On 25 February 2013 the appellant, Devon Hewey, and his co-defendant, Jay Dill, were convicted (Greaves J and a jury) of the premeditated murder of Randy Robinson who was killed on 31 March 2011. Both were sentenced to life imprisonment for murder with minimum terms of 25 years' imprisonment and concurrent terms of 12 years' imprisonment for the use of a firearm to commit an indictable offence.

3. The prosecution case at trial was that on the evening of 31 March 2011, between 8.20 pm and 8.30 pm, Randy Robinson was walking on Border Lane North, Pembroke, Bermuda when two persons on a black Honda Scoopy motorcycle drove towards him and stopped about 10-12 feet away. The sole eyewitness, Kevin Busby, described the two persons on the motorcycle as wearing all black or dark clothing, with full-face or tinted visors. The pillion passenger pulled out a firearm with his left hand and fired several shots at Mr Robinson. Between four and six shots were heard. The motorcycle then continued down Border Lane North. Mr Busby made efforts to call the police. By the time the police arrived Mr Robinson had died of two fatal bullet wounds.

4. It was the prosecution case that Mr Dill was the pillion passenger who shot Mr Robinson and that the appellant was the driver. The prosecution alleged that the defendants were members of a gang and that the motive for the murder was retaliation for an unspecified attack or attacks by another gang as part of a general cycle of attacks and retaliations between rival gangs. Evidence was called that the defendants were mid-level ranking members of the 42nd gang. Although Mr Robinson was not a gang member, evidence was called that two of his cousins were members of the Parkside gang. In addition, evidence was called that Mr Robinson's mother had hit Mr Dill some months earlier at a football match after she suspected him of attacking her son, which Mr Dill denied.

5. The appellant's mother, Ariel Cole, gave evidence that at 8.55 pm she received a call from the appellant telling her that he was coming home and asking her to put the

guard dog out, something he normally did when there had been a shooting. At about 9.00 pm or shortly thereafter, the appellant and Mr Dill arrived at the appellant's home in Palmetto Road. The appellant travelled on a black Honda Scoopy motorcycle, which belonged to the appellant's girlfriend. Mr Dill travelled on a Yamaha Nouvo motorcycle which he owned. Both bikes were parked out of sight of the road, behind the next-door neighbour's house. Mrs Cole said that when they arrived both the appellant and Mr Dill carried black helmets, that Mr Dill wore a black and red jacket and the appellant wore a white T-shirt. Mr Dill stayed the night sleeping in the bedroom the appellant shared with his brother.

6. The appellant and Mr Dill were arrested there by an armed police Emergency Response Team at about 2.50 am on the following morning, 1 April 2013. Several items of clothing, motorcycle helmets and other possessions said to belong to the appellant and Mr Dill were seized, as were the two motorcycles. Mr Dill's black and red jacket and the appellant's red and grey jacket were seized some days later. No gun was found during the search. Examination of the projectiles from Mr Robinson's body revealed that the same gun that was used to kill him was used in a gang murder some two weeks later.

7. Examination of telephone records later revealed that, among multiple phone calls and text messages, Mr Dill had twice spoken to a Christopher Parris at 8.32 pm and 8.43 pm. Evidence was called at the trial that Mr Parris was a "gang leader" of the 42nd gang. The appellant's phone records indicated that he called Mr Parris's number at 8.32 pm but did not get through. The appellant's phone records also showed that he made a four minute voice call between 8.22 pm and 8.26 pm. The record further showed that the appellant made a 32 second call to his home telephone at 8.55 pm.

8. The appellant and Mr Dill were interviewed under caution and both exercised their right to remain silent. In a later interview Mr Dill provided an alibi that on the evening of the shooting he was at the Mid-Atlantic Boat Club sometime after 8.00 pm and stated that the appellant was also there. Mr Dill said that he and the appellant had left the Boat Club about 9.00 pm. The appellant and Mr Dill were released on bail. In May 2012 they were both rearrested and charged with murder.

<u>The expert evidence on GSR</u>

9. At least 36 samples for gunshot reside ("GSR") analysis were collected from the appellant's hands and the items seized by the police. This analysis was carried out by RJ Lee Group of Pennsylvania and a GSR expert, Alison Murtha, produced a series of

reports. At the trial the defence objected to the admission of Ms Murtha's evidence on the basis that it added nothing to the prosecution case and that it would be unfair to the appellant to admit it. The judge rejected the submission subject to the prosecution serving further explanatory evidence which it did.

10. Ms Murtha explained that the primer for most ammunition is made up of barium, antimony and lead. When a firearm is discharged these elements in the primer cap are expelled through the firearm and escape forming a plume around the firearm, the shooter and anyone sufficiently close by. As the temperature drops the elements come together and condense to form a particle containing barium, antimony and lead. Those particles are referred to as three-component particles.

11. Ms Murtha also explained that one-component and two-component particles, ie particles with only one or two of the three elements of barium, antimony and lead, can also be formed when a firearm is discharged, but these are not unique to firearms and have a number of other possible sources. Sources of two-component particles include fireworks, brake pad linings and airbag exhausts. Sources of one-component lead and antimony particles could include dust, water, road dust, blown soil, imported food cans and pewter. Barium particles can be found in the environment, fertilizer, dirt and close to waste sites. Sometimes, particles deriving from other sources can be eliminated from consideration. They will be eliminated if they do not have the characteristic rounded shape (morphology) which is produced as a result of the very high temperature inside a gun. They will also be eliminated if they also contain, or are closely associated with, elements other than the three mentioned which suggest an origin other than gunfire (described as tags). Ms Murtha said that if she discovered a particle that might have an indication it came from something other than firearm discharge she would not include that particle in her report. All the one-component and two-component particles that she had reported in this case had a spherical shape and no tags. These reported particles could have come from a firearm, but they could also have come from other sources.

12. Ms Murtha said that when three-component particles (fused lead-antimony-barium particles with the right morphology and no tags) are found she could say with certainty that the particles came from a gun. This is the case whether there is one such particle or 100 particles. When such GSR is identified on a person, one of three conclusions can be drawn: the person fired a gun, or was in close proximity to a discharged gun, or came into contact with an environment or an area that contained GSR. The absence of GSR did not mean that one of these three possibilities had not occurred. Ms Murtha also stated that depending on the person's occupation and day to day activities, the average person would not have GSR on them "nor one or two-component particles as well". In the language of forensic scientists, three-component

particles are referred to as “characteristic” of GSR, two-component particles are referred to as “consistent with” GSR and one-component particles are referred to as “commonly associated with” GSR.

13. Ms Murtha accepted that the number of samples she had received for analysis in this case was high compared with other cases. The analysis of 36 samples taken from the appellant, his clothing, possessions and motorcycle (several samples from each item) had revealed thousands of particles of various chemical compositions. No three-component particles were found. However, she reported the presence of a total of 316 one-component particles of lead, antimony or barium that had spherical morphology and without tags. She also reported the presence of three lead-antimony two-component particles and one barium-antimony two-component particle, all with spherical morphology and without tags. She explained that the laboratory process examines only the first 20 particles of any particular kind found on a single sample.

14. In respect of Mr Dill, Ms Murtha found four three-component particles and a number of two-component and one-component particles present on the right and left sleeves and the front of a track suit top. She also found one three-component particle in the pocket of a pair of jeans. Mr Dill was alleged to have worn these items on the evening of the shooting and when he was arrested. Twelve one-component particles were found on the tracksuit bottoms that Mr Dill was said to have been wearing under the jeans. Eighteen one-component particles were found on the outside of a black and red jacket. Mr Dill was alleged to have worn the black and red jacket over the tracksuit top at the time of the shooting, but not when he was arrested. No three-component particles were found on either of these items.

15. Ms Murtha was asked whether the presence of one-component particles of each of the three principal individual elements that make up GSR told one something about their likely origin. She said that it depended on the activities of the individual since the particles have multiple sources.

16. She explained that several factors contribute to the loss of particles. The most important was movement or activity. Movement or activity can include washing hands, laundering and the weather. The longer the period of time between the discharge of the gun and collection, the greater was the opportunity for movement and activity. On the other hand, if the particles on an item were undisturbed, they would remain there indefinitely.

17. She accepted that hundreds and thousands of particles would be emitted when a gun is discharged and that if there were six shots of the gun under the same conditions there would be about six times the number of particles emitted.

18. Ms Murtha accepted that particles could be easily transferred from the surface upon which they were situated by primary transfer, secondary transfer or tertiary transfer and that there was a possibility of contamination from armed policemen, police cars and police stations. She had not been sent any control samples from the police station or police cars for analysis in this case in order to check whether such particles were present.

19. It was Ms Murtha's evidence that the presence of one and two-component particles, in the absence of three-component particles, was inconclusive. She reiterated that one and two-component particles could have come from the discharge of a firearm and could have come from another source.

20. Mr Robert White, a GSR expert and the former head of the Criminal Identification Forensic Bureau of the West Virginia State Police, gave evidence on behalf of Mr Dill. He agreed the threefold forensic scientist's terminology for three-, two- and one-component particles. He stated that the presence of three-component particles meant one of three things: that the person had fired a gun, was standing close to a gun when it was fired or had been contaminated. One-component and two-component particles were not considered gunshot residue in the absence of three-component particles because these particles exist in the environment and are found in many other manufacturing places. As far as he was aware, there had never been specific identification of GSR based upon only one-component and two-component particles. However, he could not say that one-component and two-component particles definitely did not come from a gun, since this remained a possibility even in the absence of three-component particles. He explained that one-component particles could come from batteries, wheel weights, fishing sinkers, electrodes, electrical supplies, plumbing supplies, glass, ceramics, car brake shoes, air bags or nail guns. He said that one-component and two-component particles can have spherical morphology but not originate from a firearm, such as lighter flint from a cigarette lighter. He agreed that particles coming from fireworks do not usually have a spheroid morphology. When asked whether the presence of single particles of all three individual components of GSR would be a peculiar occurrence, he said that without a three-component particle it was not conclusive of coming from anywhere.

21. It was Mr White's experience that the number of samples tested for GSR in this case was extremely high. He said that there may be a 100 or more GSR particles emitted when a firearm is discharged and that numerous particles would be deposited.

He had seen data which showed that two shots produced twice as much residue as one shot, so four shots should produce four times as much. In his opinion there should have been numerous gunshot residue particles, ie three-component particles, on the items Ms Murtha analysed if the person associated with them had fired a gun. He also said that he would have expected more than two of the 69 samples, the tracksuit jacket and jeans worn by Mr Dill, to have GSR on them if the person had just fired a gun four to six times. He stated that if the person wearing the jacket had fired a gun four to six times and it had not been mishandled or washed, he would expect that seven hours later there would be between 100 and 1,000 three-component particles present.

Legal proceedings

22. During the trial the judge, Greaves J, rejected a submission on behalf of the appellant that the evidence of one-component and two-component particles should be excluded on the basis that it was more prejudicial than probative. The judge also rejected a submission on behalf of the appellant that he had no case to answer.

23. Following conviction on 25 February 2013, the appellant and Mr Dill were both initially sentenced to life imprisonment with a minimum term of 40 years imprisonment for premeditated murder and concurrent terms of 12 years' imprisonment for the firearms offence. The minimum terms were subsequently reduced on appeal to 25 years in the light of the decision of the Judicial Committee of the Privy Council in *Selassie and Pearman v The Queen* [2013] UKPC 29.

24. The appeals against conviction of the appellant and Mr Dill were heard by the Court of Appeal on 2, 3 and 18 March 2016. A number of grounds of appeal were advanced in addition to an application to admit fresh evidence. Ground six of the appellant's appeal was that the judge should not have admitted the evidence of the one-component and two-component particles found on his person and possessions, because that evidence was more prejudicial than probative. In its judgment of 13 May 2016, the Court of Appeal (Baker P, Kay JA and Bell JA) held that the jury was entitled to consider the significance of the particle evidence against the appellant in the context of the other evidence in the case. The President, with whom the other members of the court agreed, observed that the judge had described carefully the limitation of the GSR particle evidence, having described what was found and what could and could not be deduced from it. In particular, the judge had explained the defence case that the one-component and two-component particles could have come from an innocent source. The applications to admit fresh evidence, which did not relate to the particle evidence, were refused and all other grounds of appeal were

dismissed. The Court of Appeal considered that when the evidence was considered as a whole there was a compelling case against each appellant.

25. On 22 May 2019 the appellant filed an application for permission to appeal to the Judicial Committee of the Privy Council on six grounds. He also applied for permission to adduce fresh evidence. The Board granted permission to appeal on the following two grounds:

> (i) Ground 1: The trial judge wrongly admitted the evidence of the one-component and two-component particles of lead, barium and antimony found on the appellant's person and his possessions. That evidence was highly prejudicial and had no probative value. That evidence should have been excluded at trial.
>
> (ii) Ground 2: Having admitted that particle evidence, the trial judge's directions to the jury on that evidence were inaccurate, imbalanced and unfair in that:
>
> > (1) The directions did not reflect the evidence of the GSR expert called by the prosecution, nor the evidence of the GSR expert called by Mr Dill, but instead inflated the evidential value of the one-component and two-component particles.
> >
> > (2) His directions did not include key aspects of the particle evidence that pointed away from the appellant, including a clear and unequivocal statement that no three-component GSR particles were found on him or his clothing or on any of his multiple belongings that were tested.

26. In support of the grounds of appeal the appellant sought permission to rely on fresh evidence, namely three expert reports of Angela Shaw, a GSR expert, dated 9 April 2019, 9 September 2021 and 30 November 2021, and a transcript of the evidence of Tarah Helsel, a GSR expert, on behalf of the prosecution on 22 February 2018 in the trial of *R v Jahmico Trott*, Criminal Case 27 of 2017 in the Supreme Court of Bermuda. The respondent opposed the application to admit fresh evidence but lodged an expert report dated 21 January 2022 by Allison M Laneve (née Murtha) and Tarah Helsel, in response to the fresh evidence on which the appellant seeks to rely. The appellant then lodged a further report of Angela Shaw dated 30 January 2022, in reply. The Board considered this evidence de bene esse, but none of the experts was called.

27. During the course of an oral hearing lasting a day and a half, a wide range of issues concerning GSR have been canvassed. It was the appellant's principal case that the Board should take this opportunity to give definitive guidance on the correct approach to GSR. For reasons which will become apparent the Board considers that it would not be appropriate to seek to give definitive guidance in this appeal and that it is not necessary to address in this judgment all of the issues raised.

Ground 1: Admissibility

28. On behalf of the appellant, it is submitted that the judge erred in refusing an application to exclude the evidence of one-component and two-component particles found on the appellant and items associated with him. The Board was shown guidance issued by the American Society for Testing and Materials (ASTM) and a report prepared by a Scientific Working Group on GSR (SWG). Both suggest that one-component and two-component particles, when accompanied by three-component particles, and/or two-component particles, can be supportive of the conclusion that the particles on that sample came from a discharged firearm. It is submitted, however, that in the absence of three-component particles, one-component (and indeed two-component particles) have no probative value in determining whether an individual has been in proximity to a recently discharged firearm, because of the equally compelling inference that the particles came from an innocent source. It is submitted that the presence of one-component and two-component particles in isolation is not merely inconclusive as to whether or not the particles originated from a firearm, but that they are neutral evidence in that they are just as likely to have originated from any one or more of their multiple possible sources so that nothing can be inferred from their presence at all. It is submitted that both the trial judge and the Court of Appeal failed to appreciate that the evidence of one-component and two-component particles had no probative value and that its admission was prejudicial because there was a clear danger that the jury would use that evidence as incriminating evidence.

29. On behalf of the respondent, it is submitted that the judge did not misunderstand the particle evidence, that he directed himself correctly as to the test of admissibility and was entitled to exercise his discretion to admit the evidence.

30. At the trial it was the evidence of both Ms Murtha and Mr White that, as a matter of science, evidence of the presence of one-component and two-component particles, in the absence of any three-component particles, did not demonstrate that the source of those particles was the discharge of a firearm as opposed to a different source. However, it does not follow from this that such evidence is irrelevant or inadmissible. The presence of one-component and two-component particles is

evidence which is consistent with their source having been the discharge of a firearm and which, when considered in conjunction with other evidence in the case, is capable of being both relevant and probative. Moreover, the guidance emanating from the ASTM and SWG appears to say that one-component particles (and it must follow also two-component particles) can support the interpretation as to origin of three- or two-component particles in the same population.

31. An analogous point, in the same context, arose in *R v George (Dwaine)* [2015] 1 Cr App R 15. There, the prosecution relied on expert evidence of two three-component particles and two two-component particles on a coat associated with the appellant. It was objected that the evidence should have been excluded because of the low level of particles, ie the limited number of relevant particles. In dismissing this ground of appeal, Sir Brian Leveson P explained that the fact that scientists had adopted a cautious approach to reporting low levels of residue, such that for that residue, on its own, no evidential significance could be attached to it, did not mean that the evidence was necessarily inadmissible or irrelevant. He continued:

> "The jury are more than able to assimilate evidence as to potential significance or lack of significance of recovered evidence, provided that there is an appropriate explanation of that potential significance, for example, by reference to what might occur in the environment or might otherwise be the consequence of entirely innocent contamination.
>
> The importance of this point can be illustrated by reference to the forensic value of the absence of evidence. Whereas it is correct to say that absence of evidence is not the same as evidence of absence, the failure to recover anything that could even remotely be consistent with gunshot residue might provide a forensic argument supporting the proposition that involvement in the discharge of a firearm is disproved by the absence of particles that could be gunshot residue. The submission that the evidence now available demonstrates that the original forensic evidence should not have been placed before the jury is rejected." (paras 46, 47)

32. As the Court of Appeal observed in the present case, the judge was correct in admitting the evidence of particles because it had to be considered in the context of all the evidence in the case. The judge correctly exercised his discretion to admit it and the Court of Appeal correctly declined to interfere with the exercise of his discretion.

Ground 2: Misdirection

33. Under this ground the appellant submits that, having admitted the particle evidence, the judge's treatment of that evidence in his summing up caused significant injustice in two ways. First, it is submitted that the directions were incautious and did not reflect the expert evidence that had been given. Instead, they inflated the probative value of the evidence of one-component and two-component particles, thereby suggesting that the prosecution case was stronger than it actually was. Secondly, the directions were imbalanced and unfair in that the jury was not directed on the key features of the particle evidence that supported the defence.

34. In his summing up the judge correctly addressed certain terminological difficulties which arise in this field. He explained to the jury that the term "GSR" is used in two distinct senses. He explained that in a general sense, it may describe all of the particles deposited as a result of the discharge of a firearm, whether one-component, two-component or three-component particles. However, he went on to explain that it is also used in a more specific sense to describe the three-component particles formed when particles of barium, antimony and lead fuse as a result of a discharge. He referred to the latter as "real GSR". He also reminded the jury that the experts' usage referred to three-component particles as characteristic of GSR, to two-component particles as consistent with GSR and to one-component particles as commonly associated with GSR.

35. The judge explained to the jury, by reference to the evidence of Ms Murtha, that the discharge of a firearm may deposit three-component particles, also known as GSR, two-component particles of any two of barium, antimony and lead fused together, and one-component particles of any of those three elements. He stated that these particles, in particular the one-component and two-component particles may sometimes have sources other than a firearm, for example some sorts of brake linings, old lead paint, pewter, fireworks, air bags, fertilizers and even soil. He explained that the process of expert analysis of particles involved not merely a consideration of the number of components. It also involved a consideration of the morphology or shape. In the case of particles discharged from a firearm, they would be expected to be molten and smooth in nature due to the high heat from the firearm. In the case of other sources, they are likely to be more rigid or jagged. In addition, particles are examined for the presence of "tags", such as potassium, sulphur, iron, magnesium, titanium sulphate, which will help to exclude them as particles likely to have come from a firearm. For example, the presence of a large count of iron would lead to a particle being discounted as having come from a firearm. In this way, he explained, it was the evidence of both Ms Murtha for the prosecution and Mr White, the expert

called on behalf of Dill, that it was possible to say that a three-component particle was from a firearm, whereas in the case of a two-component or one-component particle all that it was possible to say was that it could have come from a firearm. In the Board's view this was an appropriate direction as to the possible significance of the presence of particles and accurately reflected the expert evidence in the case.

36. In her evidence Ms Murtha had explained that if in the course of her examination she came across a particle which had an elemental tag or shape that was not consistent with the discharge of a firearm, she would automatically eliminate that particle as coming from a population of gunshot residue. On behalf of the appellant Mr James Wood QC submits that this evidence gave the misleading impression to the jury of Ms Murtha's ability to exclude the one-component and two-component particles which did not originate from a firearm, when in fact she could only exclude the obvious non-firearm particles from her analysis if there was some other marker which clearly signalled a different source. Mr Wood submits that the judge understood this to mean that there was a far greater chance that the particles she reported came from a gun as opposed to other sources, when in fact no possible source for those reported particles was any more likely than another. Furthermore, he submits that the judge in repeating in his summing up Ms Murtha's answers compounded their potential to confuse the jury.

37. Ms Murtha's evidence did not indicate that the process of elimination makes it any more likely that the one-component and two-component particles which are not eliminated are the product of a discharge. On the contrary, she made clear in her report and in her evidence that in the case of one-component and two-component particles, in the absence of a three-component particle, it would be speculative to suggest that they were or were not the product of a firearm discharge. The passages in the summing up where the judge reminded the jury of Ms Murtha's evidence on this point are regrettably muddled. However, after anxious consideration, the Board does not consider that the summing up could have led the jury to understand that it was Ms Murtha's evidence that after the process of elimination the remaining particles were more likely than not to be the product of firearm discharge. One of these passages in the judge's summing up does, however, give rise to a further difficulty which is considered at para 46 below.

38. The Board considers, however, that there is greater force in certain further objections made by the appellant.

39. First, it is submitted on behalf of the appellant that the overall effect of the judge's directions to the jury was that it was for the appellant to explain why he had these one-component and two-component particles on his clothing and that, if he

could not, this would support a finding that they came from a gun. In the course of his summing up, the judge did remind the jury in the context of the scientific evidence and the possible risk of contamination that the burden of proof was on the prosecution and that the defendants had to prove or disprove nothing. However, this would have done little to draw the sting from passages earlier in the summing up in which the judge observed that there was no credible evidence that the particles were from an innocent source. The judge was there pointing out to the jury that the defendants had not provided an explanation for the particles found on them and on their possessions. The Board agrees with the submission on behalf of the appellant. In the light of the evidence of Ms Murtha for the prosecution that, in the absence of any three-component particles on the appellant or items associated with him, it would be speculative to suggest that the one-component particles and two-component particles found were or were not GSR particulate, it was for the prosecution to disprove innocent sources. In this way, the judge effectively reversed the burden of proof.

40. Secondly, in the course of his summing up the judge placed great emphasis upon the number of one-component particles found on the appellant and on items associated with him. The impact of this was intensified by his incremental approach by which he considered each item in turn and by his repetition of prejudicial comments by the prosecution that the defendants must have been very unfortunate to be contaminated in this way if they had not been close to a discharge. The judge also expressed himself in immoderate terms, observing, for example, that the defendants were "infested" together. The point which we understand the judge to have been making is that the sheer number of one-component particles detected is capable of increasing the likelihood that they were the product of a discharge. It is certainly likely to have been understood by the jury in this way. (This point is, in our view, distinct from any issue as to discounting the significance of individual particles on the basis that other element tags indicated that they may be from another source eg excess iron suggesting from brake pads, which has been considered above. Furthermore, it is distinct from any question as to what is the appropriate unit for investigation, referred to as a population, and any question as to the significance of one-component particles found in conjunction with one or more two-component particles.)

41. The judge's suggestion that the number of one-component particles detected is capable of increasing the likelihood that they were the product of a discharge was inconsistent with the expert evidence at trial. In this regard, Ms Murtha's report relied upon by the prosecution was clear:

> "The amount of GSR particles, 2 component particles and 1 component particles found on a sample does not dictate whether or not an incident is more or less likely."

She then went on to make the point that the number of particles on a sample could be dependent on many factors including weather, activity, movement. She continued:

> "Because of these factors (and others) the amount of particulate found on a sample is not an indication of likelihood or probability. The more GSR found on an individual does not mean he or she is more likely to have discharged a firearm. Conversely, the less GSR found on an individual does not mean he or she is less likely to have discharged a firearm."

42. The fresh evidence relied on by the parties, which has been considered by the Board de bene esse, is conflicting on this point. Dr Shaw states in her first report:

> "The number however, in the absence of 3 component GSR particles, does not alter the likelihood of whether or not they originated from a firearm." (Answer 1)

and further states that there is no scientific basis to suggest that the greater the number of one-component and two-component particles found, the more likely it is that they came from a gun (Answer 11). It is also interesting to note that paragraph 5.5.3 of the current ASTM reporting guidance states that the number of confirmed two-component particles cannot be used to determine whether or not they come from a non-firearm source. On the other hand, there is material which supports the submission by Mr Poole QC on behalf of the respondent that the judge was right on this point and the number of one-component particles increases the probability that a population of particles is the product of gunshot discharge. Thus, for example, the SWGGSR Guide for Primer Gunshot Residue Analysis by Scanning Electron Microscopy/Energy Dispersive X -Ray Spectrometry (2011) states:

> "The probability that a population of particles is GSR increases significantly with … The presence and number of particles commonly associated with GSR."

43. The Board is not in a position to resolve this conflict of evidence. For present purposes, it is not necessary to do so. It is sufficient that the judge's clear indication to the jury that the number of one-component particles detected is capable of increasing the likelihood that they were the product of a discharge was not supported by the

evidence. This was a substantial error in explaining the effect of the scientific evidence and this is likely to have influenced the jury.

44. Thirdly, in his summing up the judge also emphasised the significance of the variety of particles found on the appellant and on items associated with the appellant. He strongly suggested that the fact that the three components of GSR - barium, antimony and lead - were all present individually in one-component particles made it more likely that their common source was a gun. There was, however, no evidence at the trial that it is possible to draw such an inference from the variety of single-component particles present. On the contrary, it was the evidence of Ms Murtha that they could have come from the discharge of a firearm or each one could have come from different sources; it would depend on the actions of the individual. Similarly, Mr White's evidence was that these elements exist in many areas of nature; they could have come from a discharging gun or they could have come from other places. The presence of such a variety was not conclusive of anything. What the judge did was to remind the jury of the agreed scientific guidance that one-component particles found in the presence of three- or two-component particles can support the origin of the latter. That, so far as it went, was correct. But he derived from it the quite different proposition that the presence of one-component particles of all three relevant elements is, by itself, evidence of gunshot origin. Whether there is or is not any substance in that latter contention, the Board does not have the material to say. It would need much fuller, and tested, scientific opinion. But it was not the evidence before the trial court, and it does not by any means necessarily follow from the guidance which was agreed. What Ms Murtha had said about it is recorded at para 15 above. Once again this is a serious error in explaining the effect of the scientific evidence and is likely to have influenced the jury.

45. Fourthly, the judge in summing up referred to the large number of particles found in different locations associated with the defendants and told the jury that the prosecution case was that either the defendants were "getting very unlucky that this kind of stuff is happening all the time" or that this was more evidence tending to show that they committed the offence. In the case of the appellant this must have been a reference to one-component particles. This created the impression that all one-component particles were incriminating, even in the absence of two-component and three-component particles. It was, however, the evidence of Ms Murtha that the most she could say was that the particles could have come from a firearm or they could have come from other sources. Similarly, it was the evidence of Mr White that one-component and two-component particles did not have any significance in the detection of GSR unless found in the presence of a three-component particle. No three-component particles were found on the appellant or items associated with him.

46. Fifthly, as mentioned in para 37 above, it had been put to Ms Murtha in cross examination that it was speculative to say of two- or one-component particles that they derived from gunshot. She had answered that it was equally speculative to say that they did not derive from gunshot. When summarising her evidence to the jury, the judge reminded them of the fact that she had disagreed with the suggestion put, but he wholly failed to mention the vital qualification she had attached. That completely altered the sense of her evidence and indeed, no doubt inadvertently, misrepresented it.

47. Pausing at this point to take stock, the Board is unable to accept the submission of Mr Poole that the summing up was a model of fairness and clarity. It was at times muddled. Its tone was tendentious and unbalanced. On this appeal the respondent has been hard pressed to identify where the judge fairly presented the points in the appellant's favour, in particular the significance of the absence of any three-component particles on the appellant or items associated with him. Moreover, the summing up did not provide the careful directions on the possible significance of the scientific evidence which were so clearly required.

48. At the hearing of this appeal a number of further issues concerning GSR evidence were disclosed by the fresh evidence lodged by the parties, including the following:

(i) In the light of evidence that the presence of a three-component particle may indicate that one-component particles in the same population are the product of firearm discharge, is it permissible to aggregate the three-component particles found on Dill with the one-component and two-component particles found on the appellant and items associated with him and to treat them as one population for this purpose?

(ii) Is it permissible to aggregate the one-component and two-component particles found on different items associated with the appellant and to treat them as one population for this purpose?

(iii) Does the presence of a two-component particle in the same population as one-component particles indicate that the one-component particles are the product of firearm discharge?

In view of the substantial disagreement between the experts on these further issues it would, in the Board's view, have been impossible to resolve these issues fairly without

hearing cross-examination of the experts on their written evidence. In the event, the view taken by the Board of the summing up makes it unnecessary to seek to resolve these further issues.

49. The fresh evidence which the appellant sought to adduce also included Ms Shaw's second report, dated 9 September 2021, which provided evidence of background levels of one-component and two-component particles in the environment in Bermuda. On this basis the appellant submits that it would be inevitable that random members of the public would acquire one-component and two-component particles when going about their day-to-day activities and that those particles are indistinguishable from the particles that were found on the appellant. This evidence was challenged by Ms Laneve and Ms Helsel on behalf of the respondent. Once again, the view taken by the Board of the summing up makes it unnecessary to seek to resolve these further issues on this appeal.

Proviso

50. On behalf of the respondent, it is submitted that, notwithstanding the misdirections in the summing up, this is a case where the Board can safely apply the proviso. Section 21(1) of the Court of Appeal Act 1964 provides that on the hearing of an appeal the court may "notwithstanding that they are of opinion that the point raised in the appeal might be decided in favour of the appellant, dismiss the appeal if they consider that no substantial miscarriage of justice has actually occurred".

51. In support of this the respondent relies upon the following matters, a number of which are disputed by the appellant:

(i) There was evidence that the appellant was a mid-ranking member of the 42nd gang and as such was expected to conduct revenge attacks on those who had insulted a fellow gang member. The deceased was related to two senior members of Parkside, a rival gang. The appellant and Mr Dill thus both had a general gang motive for the murder.

(ii) In November 2010 Mr Dill had been humiliated by Mr Robinson's mother in front of other gang members, and thus had a particular motive for this murder.

(iii) Mr Dill had recorded a voice message indicating his dissatisfaction with the commitment to the gang of some of its members and volunteering his readiness to shoot someone.

(iv) The gun used to kill the deceased was used in a gang murder on 17 April 2011, some two weeks after the killing of Mr Robinson.

(v) The gunman appeared to be left-handed. So was Mr Dill.

(vi) There was telephone contact with Mr Parris by both the appellant and Mr Dill, shortly before and shortly after the murder.

(vii) The appellant fitted the general description by Mr Busby as the driver of the bike. Mr Busby described the bike as a black Honda Scoopy. This matched the bike owned by the appellant which was linked to him by DNA and fingerprints.

(viii) The appellant called his mother shortly after the shooting and told her to put out the dog, something he routinely did when there had been a shooting. (For the appellant it is submitted that the prosecution evidence showed that by 8.55 pm when this call was made the news of the shooting had spread around Bermuda.)

(ix) The appellant arrived with Mr Dill in Palmetto Road, coming from the direction of the house next door where the bikes had been hidden from view, carrying black helmets matching Mr Busby's description. (For the appellant it is said that it was the prosecution evidence that it was usual for the appellant to park his bike in his neighbour's rear yard.)

(x) The appellant was in the company of Mr Dill shortly after the murder. Mr Dill's clothes matched Mr Busby's description and had GSR, ie three-component particles, on them. (For the appellant it is said that the clothing worn by Mr Dill when he was said to be with the appellant did not match the description of clothing given by Mr Busby. Furthermore, the appellant's own jacket was even more unlike the clothing described and could not be described as "black" or "dark".)

(xi) It was Mr Dill's evidence that he and the appellant had been together at all material times on the evening in question, and the appellant adopted this evidence in cross examination of Mr Dill, thus advancing the same alibi. The jury convicted Mr Dill on evidence which included three-component particles. If Mr Dill committed the murder it was a legitimate conclusion that his driver was the appellant.

52. The Board considers that the case against the appellant, although based on circumstantial evidence, was nevertheless a strong one. However, the Board is unable to conclude with confidence that no substantial miscarriage of justice has actually occurred as a result of the misdirections and it therefore declines to apply the proviso.

Retrial

53. The gravity of the alleged offence and the strength of the prosecution case might appear to suggest that a retrial is appropriate, notwithstanding the passage of time since the events with which it would be concerned. However, in the Board's view the question whether a retrial should be ordered is pre-eminently one to be decided by the Court of Appeal which has the benefit of first-hand knowledge of local procedures and conditions.

Conclusion

54. The Board will therefore humbly advise Her Majesty that the appellant's conviction and sentence be set aside and the matter remitted to the Court of Appeal for it to consider whether to order that the case be remitted to the Supreme Court to be retried and for the Court of Appeal to make such order as it thinks fit for the detention of the appellant in custody pending the re-trial or for his release on bail or otherwise, in accordance with section 21(1) Court of Appeal Act 1964.